

EDUCATION MODERN TEACHING MODEL FOR ACCOUNTING
COURSES IN VOCATIONAL AND TECHNICAL COLLEGES IN
YUNNAN PROVINCE

XU YIRONG

A thesis submitted in partial fulfillment of the requirements for Doctor
of Philosophy Program in Digital Technology Management for Education
Academic Year 2025

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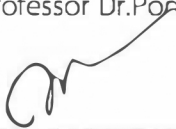
Thesis Title Education Modern Teaching Model for Accounting Courgeg in Vocational
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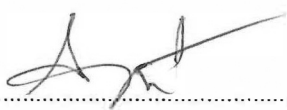

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ABSTRACT

This study explores typical drawbacks of accounting teaching at Yunnan's vocational colleges and develops a targeted modern teaching model to fix disjointed theory-practice links, outdated curricula and simplistic assessment, so as to boost teaching quality and students' employment competitiveness.

Firstly, 278 accounting teachers from 10 colleges were sampled conveniently. Using literature analysis and questionnaires, the survey found severe teaching defects: merely 11.9% of teachers fully incorporate vocational accounting skills into teaching goals, 46.4% of courses count final exams for over 70% of grades, and over 60% of teachers stick to traditional teaching resources, creating mismatches between courses, industry needs and student demands.

Secondly, core factors from survey findings built a preliminary model framework. Seventeen qualified experts optimized the framework via three rounds of Delphi method, forming a final model with six primary indicators (Teaching Objective, Teaching Content, Teaching Methods, Teaching Tools, Teaching Process, Teaching Evaluation) and 17 secondary indicators.

Lastly, empirical research verified model efficiency. A questionnaire was validated by five experts with the IOC index. Thirty teachers from Yunnan X Vocational

and Technical College were split randomly into two equal groups; pre-test results ($t=0.32$, $p=0.75$) indicated equivalent teaching capacity between groups. The experimental group adopted the new model for five weeks with flipped classroom and digital teaching tools, whereas the control group kept traditional teaching modes. Post-test data revealed the experimental group's average score rose from 70.27 to 87.40, outperforming the control group's 71.20 remarkably (all $p<0.001$). Large Cohen's d values (4.52 and 7.83) verified the model's outstanding improvement effect.

The study confirms that the constructed modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province can effectively address the pain points of traditional teaching. It provides an operable practical plan for the reform of accounting teaching in regional vocational colleges and also offers a reference for the curriculum reform of vocational education in similar underdeveloped areas.

Keywords: Accounting Courses in Vocational and Technical Colleges; Modern Teaching Model; Teaching Quality Evaluation

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Chapter 1

Introduction

Rationale

There are some problems in the teaching mode of traditional vocational and technical colleges, such as too much emphasis on theoretical teaching and ignoring the cultivation of practical operation ability, the teaching content is divorced from the actual needs of enterprises, and the teaching method is single, which is difficult to stimulate students' interest and initiative. These problems make it difficult for students to quickly adapt to the actual working environment after graduation, affecting their employment competitiveness and career development.

In view of these problems, it is of great significance to study the modern teaching mode of accounting course in Yunnan vocational and technical colleges. First of all, the economic development of Yunnan province urgently needs a large number of accounting talents with practical operation ability. By studying and improving the teaching mode, we can better cultivate high-quality professionals who meet the needs of regional economic development. Secondly, one of the core characteristics of vocational education is the emphasis on practical operation ability. Through the research on the modern teaching mode of accounting course, we can better combine theoretical knowledge and practice, and enhance the employment competitiveness of students. In addition, there are differences between Yunnan vocational and technical college and developed regions in the allocation of educational resources. Studying the modern teaching mode of accounting courses helps to optimize the utilization efficiency of existing educational resources and improve the overall teaching effect. In recent years, China's educational authorities attach great importance to the development of vocational education. Studying the accounting teaching mode of Yunnan vocational and technical college can better implement national policies, improve the quality of teaching and promote the sustainable development of vocational education. Finally, the purpose of the

research teaching mode is to help students master the skills needed for practical work, so as to better adapt to the market demand, ensure that they can be employed smoothly, and seek higher development space.

Research Question

How to design and apply a modern teaching model suitable for accounting courses in vocational and technical colleges in Yunnan Province in order to significantly improve the teaching effect?

Objectives

1. To study the present teaching status of accounting courses in vocational and technical colleges in Yunnan Province
2. To design a modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province
3. To evaluate the modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province

Research Hypothesis/Hypotheses

The quality of teaching and learning has been significantly improved with the adoption of a modern teaching model for the accounting courses at X Vocational and Technical College.

Scope of the Research

Population and the Sample Group

Population

Phase 1: The total population comprises 352 full-time accounting teachers from 10 vocational colleges.

Phase 3: All full-time teachers engaged in accounting teaching at X Vocational and Technical College of Yunnan Province amount to 35.

The Sample Group

Phase 1: The final valid sample size is 278 teachers (300 teachers were selected via simple random sampling for questionnaire distribution, and 278 valid questionnaires were retrieved).

Phase 3: 30 teachers who teach accounting courses were randomly selected from Yunnan Province X Vocational and Technical College, and they were divided into two groups (experimental group and control group), with 15 teachers in each group.

The Variable

Independent Variable

1. In phase 1, Independent variables are the factors that affect the teaching status of accounting courses
2. In phase 3, the independent variable is the modern teaching model of accounting course.

Dependent Variable

1. In phase 1, The dependent variables are the teaching status of accounting courses
2. In phase 3, the dependent variable is teaching quality.

Contents

1. Explore the current teaching situation. Researchers collect and analyze relevant literature to identify existing problems and corresponding solutions. Questionnaires are distributed to obtain opinions from 278 accounting teachers of 10 vocational colleges in Yunnan Province.
2. Develop and apply the modern teaching model. Based on results from literature review and questionnaires, core factors are summarized to establish the teaching model. Seventeen accounting experts optimize the model via multiple rounds of the Delphi method. A detailed teaching plan is formulated for X Vocational and Technical College of Yunnan Province according to the finalized model.
3. Evaluate the modern teaching model. Pre-tests are conducted on 15 teachers in the experimental group and 15 teachers in the control group from the

college. The experimental group receives five weeks of new teaching practice, while the control group is taught with traditional methods. All participants complete teaching quality questionnaires after the experiment, followed by statistical analysis to verify the effectiveness of the proposed model.

Time

The specific research phase spans from March 2024 to August 2025.

Advantages

1. Multi-channel data collection: the study collects data through various methods such as literature review, questionnaire survey and expert review, which enables us to comprehensively understand the current teaching situation of accounting courses in vocational and technical colleges in Yunnan Province from different channels such as theoretical research, feedback from frontline teachers and opinions from professional fields. This multi-channel data collection method helps to reveal the deep-rooted problems in teaching and ensure the comprehensiveness and depth of the research results.

2. Model design with the participation of experts: In the process of designing the teaching model, the Delphi method was fully utilized to invite experts in the industry with rich experience and profound professional knowledge to conduct multiple rounds of evaluation. The experts strictly check the scientificity and practicality of the teaching model and put forward valuable modification suggestions and recommendations. This expert participation in the design not only improves the effectiveness of the teaching model, but also enhances its operability and applicability in actual teaching, which helps to ensure that the teaching model can truly meet the teaching needs and promote the improvement of teaching quality.

3. Evidence-based teaching improvement: the study is based on empirical data for the design and evaluation of the teaching model, and the actual effectiveness of the teaching model is examined by carrying out teaching experiments in X Vocational College in Yunnan Province, and collecting data from

the questionnaire of teaching quality test before and after the experimental teaching. This teaching improvement method based on empirical data ensures the actual effect and feasibility of the improvement measures, avoids the problem of disconnection between theory and practice, and helps to realize the optimization of teaching practice and improve the relevance and effectiveness of teaching.

4. Innovative application of modern teaching mode: the research is committed to developing a teaching mode for accounting courses that adapts to the needs of modern education, keeping pace with the development of the times and educational changes. Through the introduction of modern teaching concepts and technical means, innovative teaching methods and means, the research and development of the teaching mode can better stimulate students' interest and initiative in learning, improve students' practical ability and comprehensive quality, to meet the needs of students and the market for accounting talents, for the development of accounting education to provide a new way of thinking and direction.

5. Combination of quantitative and qualitative analysis: In the process of data analysis, the study not only uses quantitative analysis methods, such as descriptive statistical analysis, difference analysis, etc., but also combines qualitative analysis, such as the analysis of expert review opinions and in-depth interpretation of teachers' feedback. This combination of quantitative and qualitative analysis makes the results of the study richer and more three-dimensional, and can reveal the current status of teaching and the effects of the model from different dimensions, providing deeper insights.

6. Direct educational practice guidance: the research results have strong practical guidance and can be directly applied to the teaching practice of accounting courses. The research not only provides the design scheme of the teaching model, but also verifies its effectiveness through teaching experiments, which provides teachers with specific guidance for teaching improvement in the teaching process.

Definition of Terms

1. Modern teaching model Modern teaching model refers to a relatively stable, systematic and theoretical paradigm of teaching activities formed on the basis of certain teaching ideas and teaching theories. It is the embodiment of the concrete connection between teaching theory and practice, and it is also a systematic generalization of teaching experience. Modern teaching model not only includes teachers' teaching behavior, but also involves curriculum design, teaching principles, teacher-student activity structure, ways and means. This model has the following characteristics: (1) Holistic: modern teaching model is an organic whole composed of theoretical basis, teaching objectives, operational procedures, realization conditions, evaluation and other elements. (2) Simplicity: it reflects the most central part of teaching theory or activity mode in a simplified form, which is easy for teachers to understand, grasp and apply. (3) Operational: modern teaching mode is a concrete, operational teaching ideas or theories, providing a more abstract theory much more concrete framework for teaching behavior. (4) Completeness: it has a complete set of structure and a series of operational requirements, reflecting the theoretical self-explanatory and process of beginning and end. (5) Stability: modern teaching mode reveals the universal law of teaching activities to a certain extent, and has a certain stability. (6) Flexibility: In the process of application, the characteristics of the subject, the content of teaching, the existing teaching conditions and the specific situation of teachers and students must be taken into account to make methodological adjustments.

Modern teaching mode emphasizes the student's subjectivity, attaches importance to student participation in teaching, and according to the needs of teaching and learning activities reasonably designed "teaching" and "learning". In addition, the modern teaching model also pays more and more attention to the introduction of new theories and results of modern science and technology, such as the use of computers and other advanced scientific and technological achievements, to improve the scientific content of teaching conditions.

2. Accounting courses in vocational and technical colleges refers to Accounting courses in vocational and technical colleges are characterized by the combination of theory and practice. These courses aim to develop students' professional knowledge and practical skills in accounting to meet the demand for accounting professionals in the society and the industry. Accounting courses usually cover a wide range of areas such as financial accounting, managerial accounting, auditing, taxation, etc. They are designed to help students master the fundamentals of accounting, understand accounting regulations, utilize accounting software and tools, as well as conduct financial analysis and decision-making.

In vocational and technical colleges, the teaching of accounting courses faces the influence of traditional educational concepts, and some teachers may neglect the important aspects of practical teaching, which directly affects the quality of student learning. Therefore, it is of great significance to reform the teaching of accounting courses, to strengthen the practical teaching link, as well as to combine the modern teaching mode with teaching innovation, in order to improve the quality of teaching and the practical working ability of students.

Research Framework

The framework of the study is summarized in three stages: first, the current teaching situation is comprehensively analyzed through literature review and questionnaires to clarify the problems and improvement strategies. Second, the modern teaching model is refined based on the literature and questionnaires and optimized using the Delphi method, and the model is applied to teaching practice. Finally, the effectiveness of teaching is assessed by developing and evaluating the teaching quality questionnaire. This process ensures that teaching improvement is comprehensive, scientific and effective. The framework diagram is shown below.

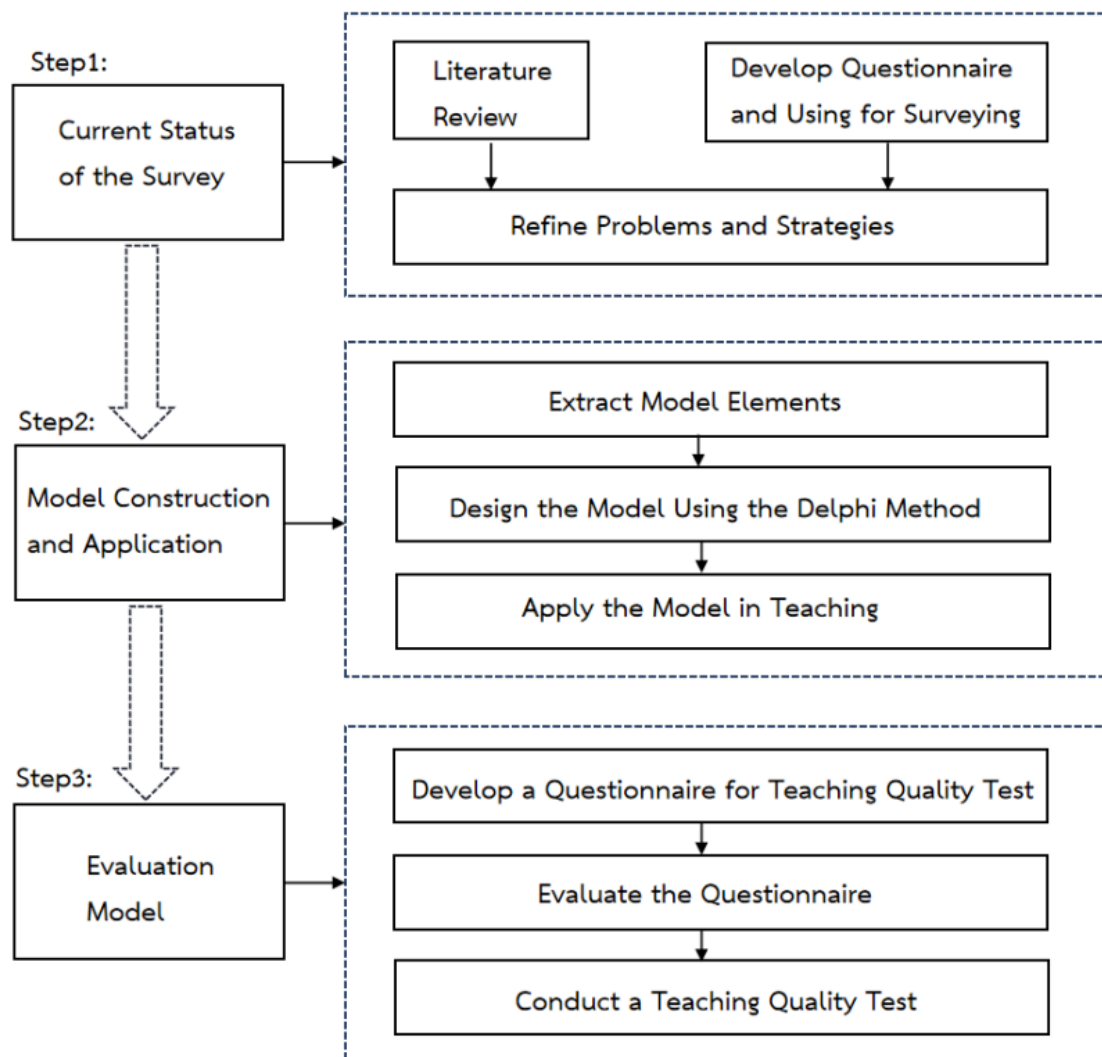


Figure 1.1 Research Framework

Chapter 2

Literature Review

In order to gain an in-depth understanding of the current teaching situation of accounting courses in vocational and technical colleges in Yunnan Province, this study will accurately identify the problems and potential solution strategies in the teaching process by extensively collecting and meticulously analyzing the relevant literature, so as to lay a solid foundation for the design and evaluation of the subsequent modern teaching model. The literature review of this study will closely focus on the three research objectives and focus on the following five key elements:

1. Problems in teaching accounting courses in vocational and technical colleges
2. Countermeasures to improve the teaching quality of accounting courses in vocational and technical colleges
3. Research on the Integration of modern information technology and teaching of accounting courses
4. Application of situational cognition theory in teaching and learning
5. Related Researches

Problems in teaching accounting courses in vocational and technical colleges

He Ying (2019) believes that most finance and economics majors will offer management accounting courses in the daily teaching process of higher vocational colleges, but from the perspective of practical teaching, there are still many shortcomings: first, there is no complete and systematic design framework for accounting teaching, and the teaching contents of management accounting, financial management, economic law and other courses are repetitive. The second is the unity of teaching methods. At present, most higher vocational colleges still stay in the traditional "process" teaching method stage of "speaking, listening and teaching". The

third is the lag of teaching content, which focuses more on accounting than analysis and management, but this has deviated from the requirements of enterprises. Fourth, the level of teachers needs to be improved. Some young teachers do not have enough knowledge of management accounting theory due to their lack of work experience in enterprises.

Yang Jinmei (2019) believes that the teaching mode of higher vocational colleges is still dominated by the traditional teaching mode and still follows the "Teacher centered" classroom mode of "teaching acceptance". This teaching mode fails to make full use of the advantages of Internet+informatization and does not meet the requirements of the development of the times. The management accounting course system is huge and the content is complex, while the learning ability of higher vocational students is relatively weak, which increases the difficulty of teaching. At the same time, the performance assessment method is single, mainly based on the final examination, which fails to reflect the students' performance in the learning process in the assessment results, and fails to effectively achieve the teaching goal of vocational training.

Bai Luzhen & Qiu Yulian (2019) believe that there are still many deficiencies in the current teaching situation of management accounting, which are mainly reflected in the following aspects: ideas need to be changed, focusing on cultivating students' ability to analyze and solve problems; The curriculum system needs to be integrated to form a relatively systematic curriculum system; The teaching content is out of touch with China's economic environment and management accounting practice; Lack of teachers with profound theoretical knowledge and rich practical experience; Teaching still adopts the one-way, indoctrination teaching method of "teachers speak, students listen"; The single teaching means can not mobilize the enthusiasm of students; There are some problems in teaching, such as theory and practice. The assessment method is relatively simple, mainly based on the final examination.

Chen Youwei, et al. (2020) believe that the discipline system of accounting major in higher vocational colleges is basically divided into three categories: professional basic courses, professional core courses and professional elective

courses. The courses basically cover accounting courses such as basic accounting, financial accounting, cost accounting, accounting computerization, cashier practice and financial management. The above courses have serious overlapping and repeated contents. Secondly, although some accounting courses have basically been taught in computer rooms, from the perspective of practical application effect, they only use a single professional software for practical training, and most of them deal with repeated economic business, lacking an overall grasp of the actual business process and related jobs.

Kang Le (2020) believes that at present, the vast majority of accounting majors in higher vocational colleges do not follow the basic laws of professional ability training and consider the characteristics of accounting profession in the curriculum system, focusing on the learning of basic theoretical knowledge, ignoring the practice of students' professional skills and the cultivation of relevant professional abilities. In addition, although accounting teachers in higher vocational colleges have certain professional knowledge reserves and qualification certificates, most of them lack working experience in enterprises. The practical teaching of accounting major in higher vocational colleges is divided into on Campus Training and off campus training. The on campus training is basically completed through financial software, and the training module design is single and the teaching materials are outdated. And the off campus training teaching is very few.

Yang Zhe (2020) believes that under the traditional teaching mode, most higher vocational students need to first complete the courses of basic accounting, cost accounting and financial accounting, and then complete the training content under the guidance of professional teachers. Accounting teachers in Higher Vocational Colleges mostly explain and lead students to do practical training courses in the classroom. There is less interaction between teachers and students. Students' learning process is more passive, and the effect of practical learning is poor. Through investigation and research, it is found that most students hope that teachers can adjust their discourse volume to help students carry out learning activities.

Zhu Ji (2020) believes that the problems of the financial accounting course are that the selection of textbooks and books is not standardized, the content of textbooks and books is old, and the content of textbooks does not meet the actual needs of enterprises, resulting in the trained accounting talents not meeting the needs of the market.

Wang Yaling (2021) believes that the problems existing in the teaching of management accounting in Higher Vocational Colleges under the new situation are: the teaching method is single, teachers use textbooks and blackboard writing to explain to students in class, and students listen passively. Due to the privacy of enterprise business data, it is difficult to obtain real cases for students to practice, which is not conducive to cultivating students' ability to solve practical problems with the knowledge they have learned. At present, the teaching content of management accounting course in Higher Vocational Colleges in China is basically the content of traditional management accounting with industrial enterprises as the main target, which is out of touch with today's modern commercial society.

Li Xiaolin (2021) believes that management accounting, as an emerging discipline, most of the course theories and knowledge system involve the application of many mathematical analysis models and formulas, and students' interest in learning is low, so the course is not paid enough attention. At present, higher vocational colleges are relatively lack of teachers with high professional quality of management accounting, and few teachers can teach management accounting courses and take students to participate in skill competitions. In addition, the lack of teaching and training facilities and equipment, as well as the disconnection between accounting skills teaching content and skills competition, will lead to the disconnection between daily teaching and skills competition.

Wang Yinglin (2021) believes that the traditional teaching mode pays too much attention to theoretical knowledge and ignores students' practical ability. In the classroom, teachers' lectures and students' records are the main. First, the effect of teaching interaction is not high. The teaching content focuses more on the final

exam than on cultivating students' ability to test for professional certificates. The unreasonable arrangement of internship time has affected the actual teaching effect.

Liu Qiaoying (2023) believes that there are problems in the current cost accounting course in Higher Vocational Colleges: first, the curriculum arrangement system is chaotic and lack of logic. At present, many higher vocational colleges put the teaching of "management accounting" in front of "cost accounting" in the curriculum arrangement. The lack of logic before and after the course knowledge easily leads to students' inability to connect the knowledge points before and after, and it is difficult to master the real cost business accounting skills. The second is to pay attention to theoretical teaching and ignore practical operation. On the basis of 80 total class hours, the training part generally accounts for about 24 class hours, which is obviously low. Third, the course assessment method is single, which can not truly evaluate the learning level of students. Fourth, the teaching method is single, and it is not good at using modern information technology such as Internet technology into the teaching of accounting course.

Yu Youcai (2023) believes that there is a lack of information technology teaching content in the teaching of accounting courses in higher vocational colleges. With the pilot and gradual promotion of 1+x vocational skill level certificate, accounting students who need vocational skill level certificate should have corresponding information technology skill training courses, and this content is still lacking; Secondly, accounting teachers lack information-based teaching methods in professional classroom teaching, student training and teaching training. They do not use enough information-based teaching tools such as rain class and cloud class. Most of the teachers used are also used for roll call and questioning. Teachers and students' participation is not high, and the classroom vitality has not been stimulated.

Liu Lianfei (2024) believes that China is accelerating the construction of the vocational education system and realizing the reform and development of the trinity of industry, specialty and employment, which puts forward new requirements for the talent training mode of higher vocational education. In this context, the problems

existing in the teaching of financial accounting course in higher vocational colleges are as follows: there is a big gap between the content of financial accounting course in Higher Vocational Colleges and the demand for talents in enterprises; The teaching materials of financial accounting course in higher vocational colleges contain knowledge about the examination of accounting certificates, which is not fully integrated; The knowledge points of accounting competition are relatively difficult, and there is a big gap between them and the daily contents of accounting courses in higher vocational colleges.

Countermeasures to improve the teaching quality of accounting courses in vocational and technical colleges

Teaching objectives

Man Qianqian (2019) believes that the most critical responsibility of higher vocational colleges is to shape and cultivate practical talents, and then transfer the above talents to relevant enterprises. Therefore, higher vocational colleges should take the cultivation of comprehensive talents in the field of management accounting as the goal, carry out curriculum reform, and be good at ensuring the comprehensive effectiveness of talent cultivation by relying on diversified ways and means, so as to improve the overall teaching level of management accounting.

He Ying (2019) believes that with the continuous development of society, the quality requirements for management accounting talents are becoming more and more stringent. In order to meet the new requirements of accounting personnel under the new situation of the Internet, higher vocational colleges should pay more attention to the cultivation of students' management accounting skills, and pay attention to the cultivation of students' Application-oriented skills. It is required not only to systematically master the knowledge and skills of management accounting itself, but also to have other course related knowledge, such as the knowledge of economy and management. Add courses such as management accounting practice and enterprise internal control, increase students' management accounting concepts,

and improve students' professional quality of management accounting. Therefore, it needs the joint efforts of schools, teachers and students.

Zheng Meiqing, Liu Shuye & Yan Yukang (2021) believe that the accounting major in higher vocational colleges should implement the deep integration of "schools and enterprises", realize the docking of specialty setting and industrial demand, curriculum content and professional standards, teaching process and production process, build a productive practice base in the school, arrange students to enter the practice base in batches to work, and the enterprise staff will be the teacher, so that the students can carry out the real operation, realize the "zero distance" docking between schools and positions, and meet the needs of graduates to adapt to the work position at any time after entering the enterprise.

Li Xiaolin (2021) believes that the modular teaching system with the deep integration of "course training competition" should take the cultivation of professional post ability and quality of management accounting as the core goal, incorporate the management accounting skills competition into the professional core courses and talent training program, and focus on the cultivation of students' management accounting

Yang Lijuan (2022) believes that guided by the professional ability and quality of management accounting, the scope of curriculum reform and curriculum goal design are defined according to the "guidance system" and "ability framework", and the professional ability and quality are divided into four dimensions: professional ethics, knowledge and technology ability, information processing ability, and management behavior ability. The code of professional ethics refers to the "ability framework", including practicing the socialist core values and establishing new development concepts; Love work, adhere to the principle of integrity, provide true and accurate management and accounting information, keep work secrets, and actively promote the unit to bear the necessary social responsibilities. The knowledge and technical ability shall be determined according to the application guidelines of the eight modules. Information processing capability includes data analysis and processing capability, management accounting report and analysis

capability, etc. Management behavior ability includes the ability to analyze and solve problems, innovation ability, interpersonal communication and leadership ability.

Yu Hua (2022) believes that on the basis of exploring the essential characteristics of flipped classroom, the teaching objectives of management accounting course are divided into three levels: basic objectives, strengthening objectives and improving objectives. The basic objectives focus on the basic theories and methods in the field of management accounting. The strengthening goal is to cultivate students' comprehensive analysis and decision-making ability to find, analyze and solve problems on the basis of achieving the basic goal, mainly in the form of case analysis and classroom discussion; The improvement goal will be based on the basic methods and tools mastered in the basic goal, focusing on strengthening the solution of the problems in the goal, and using tools to carry out model design, in order to extract universal and practical model tools from relevant cases.

Teaching methods

Song Shasha (2019) believes that exploring the application of project teaching method in the course of accounting computerization of accounting major in Higher Vocational Colleges focuses on cultivating students' practical ability. First of all, according to the content of the textbook, it is necessary to equip specific project cases related to it, so that students can improve themselves by analyzing cases and finding specific problems. Secondly, explain the teaching content according to the characteristics of students, so that students can easily accept it. Finally, teachers are good at using modern information technology to teach students. At the same time, students are also encouraged to use the network to collect information and design programs independently.

Li Xiaolin (2021) believes that the Ministry of finance of China has started to build a management accounting case base since 2016, and relevant experts, scholars and business people have collected and sorted out a large number of real cases of enterprise management accounting. Therefore, classroom scenarios and teaching links can be designed according to cases, and more flexible teaching methods such

as discussion and field investigation can also be adopted to fully integrate the theories, methods and tools of management accounting with the value chain management and business processes of enterprises, so that students can be on the spot and achieve the purpose of applying what they have learned and drawing inferences from one instance.

Wu Shanshan, Huang Yalu and Gao Yu (2022) believe that the implementation of "case sharing" collaborative teaching in the ideological and political course and the basic accounting course, which interprets the same case from the perspective of Ideological and political theory and professional knowledge, has positive significance in confirming the teaching content, strengthening students' values and improving students' ability and quality. First, it helps to realize the integration of valuable knowledge and instrumental knowledge. Second, it is conducive to integrating professional knowledge into the national strategy and relevant policies of the industry, guiding students to focus on practical problems and improving their ability to find and solve problems. Third, it can effectively excavate and refine the ideological and political elements in professional courses.

Teaching tools

Liu Junjie (2019) believes that traditional teaching methods can no longer meet the teaching needs of modern accounting classes. The online and offline interactive teaching mode can better mobilize the enthusiasm of students. Many new teaching methods, such as cloud class, MOOC and micro class, have begun to enter the classroom. These emerging teaching platforms provide convenience for teachers to share teaching resources, expand teaching methods and carry out process assessment. Taking cloud class as an example, it is a cloud service platform that uses smart mobile devices represented by smart phones to carry out interactive teaching inside and outside the classroom in the network environment. It can realize interactive teaching processes such as check-in, assessment, resource display, classroom testing, brainstorming, discussion, and homework after class on mobile phones.

Ou Yangqin (2019) took the financial accounting course reform of Zhejiang Industry and Trade Vocational and Technical College as an example to explore the hybrid teaching method of combining online and offline on the online platform. Relying on the online platform to carry out teaching relying on the online platform to carry out teaching. In the pre class link, students can independently learn online videos and record problems in learning. Teachers urge students to learn and understand learning problems through the platform. During the class, students take the initiative to ask questions, and teachers solve problems in the most effective way. After class, students consolidate their learning through the platform, send questions through the platform, and teachers can answer questions in time. Practice shows that this mode breaks through the limitations of time and space, and makes students change from passive learning to active learning, which has obvious advantages.

He Ying (2019) believes that management accounting is a professional core course with strong theoretical and practical nature. Before class, teachers can strive to build teaching resources supporting management accounting from the aspects of "Internet+courseware", "Internet+Course" and "Internet+Classroom"; In class, teachers can conduct scenario exercises to simulate the real management accounting environment, and then adopt "Problem-based Teaching", requiring students to play roles to increase their interest in learning. After class, teachers use the Internet to provide the supporting resources for students to use after class, and assess students by setting questions, answering questions, and certification of relevant ability certificates.

Chen Linghui (2020) believes that from the perspective of the main body, the innovation and entrepreneurship curriculum reform of big data needs to carry out corresponding curriculum data analysis on multi-level data in combination with contemporary data changes. Using diversified curriculum reform methods such as "Internet+curriculum reform" to optimize and improve the curriculum. In this way, students' corresponding curriculum change trend will also change in the overall

learning. Finally, the efficiency of the innovation and entrepreneurship curriculum reform under the background of big data has been comprehensively improved.

Li Xiaolin (2021) believes that the current competition platform for management accounting in the accounting skills competition is the integrated platform for management accounting TTC learning and training competition developed by a technology Co., Ltd. The teaching content of accounting skills should be related to the skills competition, so as to make full use of the TTC learning, training and competition integration platform to allow students to form teams freely for training and competition.

Wu Shanshan, Huang Yalu and Gao Yu (2022) point out that teachers may combine online and offline teaching by adopting the flipped classroom. Leveraging modern internet technologies, all practical achievements completed by students in offline accounting courses can be uploaded to relevant platforms for public presentation. It not only broadens the influence of practical accounting teaching but also motivates students to engage in practical learning.

Teaching content

Chen Youwei, et al. (2020) believe that in the process of setting up accounting courses, it is necessary to analyze in detail the important characteristics of China's leading industrial structure and the development trend of new technology and accounting related posts, so as to set up diversified accounting professional knowledge based on this, combined with the current and future market demand for accounting employment, so as to achieve the synchronous development of accounting related courses teaching and industry, and avoid the simplification of theory and practice.

Zhu Ji (2020) believed that under the background of the pilot work of the "1+x" certificate system implemented by the national departments, the reform of the financial accounting course should make the teaching content integrate with the examination content of the accounting professional certificate, serve the national needs, market demand and improve the employability. In the teaching practice, it is required to reform the curriculum to varying degrees, and transform it into a feasible

curriculum according to the cognitive law and the law of career growth. Integrate the test content, test methods, professional quality, humanistic quality, problem analysis and problem solving ability, and carefully design the integrated classroom training strategy of "teaching", "learning" and "doing" in the teaching link.

Du Tingyu (2021) believed that in the teaching of financial accounting course, we should strengthen the training. Based on the requirements of the "1+x" certificate system, we should first connect the professional skill level standard with the professional teaching standard; The second is to connect the content of vocational skills training with the teaching content of the course; The third is to connect the "1+x" certificate identification with the course assessment; Fourth, realize the full integration of "1+x" certificate system and professional curriculum system.

Zhao Jun (2021) believes that it is necessary to establish the integration scheme and curriculum system of vocational skills and academic education, fully integrate the "x certificate" into the "1" mode, and connect and integrate the "x certificate" with "1". The specific operation is to strengthen or supplement the seven types of vocational skill level certificates corresponding to the content of accounting related courses, clarify the corresponding relationship, and determine the content of course construction according to professional needs; We should be good at the deep integration of modern information technology and curriculum, and reflect the classroom environment with students as the main body and teachers as the leading role. After the demonstration of this teaching mode, the pass rate of students in the first national vocational skill level certificate examination has reached 100%, which has been publicly praised by the certificate evaluation organization recognized by the Ministry of education, and students' professional skills have been improved and strengthened.

Li Xiaolin (2021) believes that the curriculum system can be reconstructed and the curriculum content can be integrated according to the three modules of the basic theory of management accounting, tool methods and competitive positions. Teachers summarize, summarize, synthesize and refine the teaching content of management accounting according to four different positions, and make

corresponding teaching design. Then the teaching content is designed according to the post, and the practice operation is repeated on the integrated platform of management accounting TTC learning and training competition.

Zheng Meiqing, Liu Shuye & Yan Yukang (2021) in order to closely meet the needs of accounting talents in small and micro enterprises, the accounting major of Shanghai Donghai Polytechnic needs to reconstruct and reform the teaching content of accounting major in higher vocational colleges, transform the accounting course content of Higher Vocational Colleges from accounting standards for business enterprises to accounting standards for small business enterprises, and develop a series of supporting course resources to support the implementation of teaching reform, so as to match the accounting teaching content of Higher Vocational Colleges with the employment orientation.

Li Xuan (2022) needs to systematically construct the curriculum system due to the comprehensive characteristics of management accounting. Specifically: first, on the basis of the existing curriculum, the curriculum system of "American certified management accountant" is used for reference. The curriculum system includes two parts: financial planning, control, performance and financial decision-making. The second is to solve the problem of overlapping between the teaching content of cost accounting and financial management and the teaching content of management accounting, and take measures such as adjusting the teaching order and increasing the communication between teachers to alleviate this contradiction in the short term.

Teaching strategies

Liao Shiyun (2019) reform strategy of management accounting teaching in Higher Vocational Colleges: first, improve the innovation of teaching, give more class hours to management accounting major, and combine it with the needs of society; Let students cooperate in groups in the teaching process. Second, increase some social practice activities to promote the operation and learning of students' specific skills. Third, we should strengthen the construction of teaching staff and improve teachers' professional knowledge and skills; Innovative teaching software and

teaching methods. Fourth, combine enterprises with higher vocational colleges, and design targeted teaching plans and teaching contents according to the specific needs of enterprises.

Wang Heli (2020) believes that action oriented teaching is mainly divided into six stages: information collection, work plan formulation, decision, plan implementation, inspection and evaluation. First of all, action oriented financial accounting courses are set up to effectively integrate theoretical knowledge and practical skills, and promote accounting talents in Higher Vocational Colleges to meet social needs. Secondly, 2. introduce accounting training software to avoid the disconnection between knowledge and practice; Finally, according to the action system, an appropriate evaluation mechanism is constructed, and the students' test scores are 30% of daily performance, 30% of written test scores and 40% of practical training scores, so as to show the importance of practical training and improve the students' attention to practical training.

Yang Zhe (2020) believes that the application of flipped classroom in the training of financial accounting course is conducive to improving the enthusiasm of students and enhancing the interaction between teachers and students, students and students; It can improve teachers' teaching efficiency and innovate teaching methods; It is conducive to improving students' sense of cooperation and better completing practical training tasks by dividing them into study groups.

Wang Yinglin (2021) aimed at the problem that the current accounting teaching lacks the cultivation of students' practical ability, teachers need to change the traditional teaching methods and adopt the strategy of integration of teaching, doing and integrating into the teaching process of accounting major. At the level of teachers, it can improve their professional ability in the actual job. At the student level, the overall teaching process avoids abstract teaching, facilitates students' mastery and understanding, integrates theory and practice, truly realizes the teaching goal of sustainable development, improves students' professional skills, and comprehensively meets the current actual teaching needs.

Yu Youcai (2023) believes that the strategies for constructing the dynamic classroom of accounting major in higher vocational colleges are as follows: first, integrate the cultivation of Ideological and political education with the vocational education of accounting major to promote students' learning enthusiasm; Second, the theoretical teaching and entity teaching should be integrated for teaching research and implementation; Third, the use of modern information technology and other diversified teaching methods to enhance classroom vitality; Fourth, the introduction of the "1+x" certificate system enables the combination of academic education and skill training education, and the teaching content becomes richer.

Ye Ting (2023) believes that "curriculum and certificate integration" is to add the curriculum standards and contents of "1+x" certificates to the curriculum standards and teaching contents of academic education as appropriate, and it is the docking of academic certificates and vocational skills certificates. The course certificate integration of management accounting in higher vocational colleges can be carried out by reforming the teaching process, reforming the teaching methods, inviting industry experts to the campus, strengthening the construction of double qualified team, promoting the construction of credit bank, promoting the construction of national qualification framework, and reforming the evaluation methods.

Liu Qiaoying (2023) believes that "curriculum post integration" means that the curriculum content meets the skill requirements of specific employment positions, and the curriculum education system should be connected with the post skills to cultivate talents suitable for the needs of enterprises; "Course certificate integration" means that the course content should be connected with the content of the vocational qualification certificate, so that students can not only learn professional course knowledge, but also successfully pass the vocational qualification certificate examination and obtain relevant vocational qualification certificates. Under the mode of "course certificate integration and course post integration", the course of cost accounting can not only enable students to master the post skills of cost accounting,

better adapt to the needs of enterprises, but also learn professional knowledge, obtain relevant professional certificates, and obtain higher social recognition.

Liu Lianfei (2024) believes that the reform strategy of financial accounting course in Higher Vocational Colleges under the background of "post course competition certificate" Integration: first, take the post demand as the guidance, integrate the skills and majors of actual jobs into the teaching objectives of the course, and combine the practical operation and theoretical knowledge of financial accounting. The second is to add relevant contents such as industry certificate assessment and practical skills training to the financial accounting course. Third, increase competition activities to improve students' professional skills. The fourth is to establish the relevant curriculum resources supervision group, regularly inspect and evaluate the financial accounting curriculum resources, and regularly carry out teacher discussion meetings; Fifth, strengthen the integration of professional education and digitalization.

Teaching implementation

Du Suyin (2019) proposed to actively promote the integration and reconstruction of relevant specialties in the new era by setting up diversified and interdisciplinary knowledge, industry and finance integration, building a first-class accounting professional teacher team in higher vocational colleges, school enterprise cooperation, and accounting skills competition, and combining talent training objectives with the focus of economic development and industrial talent demand to cultivate compound accounting talents with excellent "comprehensive quality+professional skills".

Yang Zhe (2020) believes that flipped classroom focuses on students' learning through micro class, MOOC and other ways to realize the interaction between students and students and teachers. The construction strategies of hybrid teaching mode based on flipped classroom are as follows: teachers can formulate teaching objectives and content themes, students can form teams freely to complete the training content, and display the completed content in the classroom. In the specific teaching process, we should pay attention to the methods and skills to improve

students' core literacy, and help students apply the knowledge they have mastered to specific situational learning. In depth investigation of students' basic learning situation and career planning process stage, we should pay attention to understanding the shortcomings and advantages of students' learning, so that students can learn to analyze the key points of financial accounting training.

Ju Xiusha (2021) analyzed the training mode of accounting talents in Higher Vocational Colleges from the perspective of meeting the needs of small and medium-sized enterprises, and pointed out the deviation between it and enterprises in talent training. On this basis, combined with the actual situation of small and medium-sized enterprises in the region, this paper explores the training mode of accounting talents based on Post Professional Ability: determine the training objectives of talents suitable for post professional ability, formulate a perfect training curriculum system for accounting talents, set up courses that are connected with post skills, focus on the needs of enterprises, take into account the needs of students' innovation and entrepreneurship and development, teaching methods should be beneficial to the training of students' post skills, and establish a perfect practical teaching system and an evaluation mechanism that reflects the level of post skills. In addition, teachers must have a solid theoretical foundation and rich practical experience.

Wang Yaling (2021) believes that under the new situation, the reform measures of management accounting teaching in higher vocational colleges should apply modern teaching methods to expand the boundaries of teaching activities in space and time. At the same time, we should apply all-round teaching methods, such as case teaching method. In addition, accounting teachers in higher vocational colleges should strengthen the construction of teaching staff of management accounting through internship, continuing education, summer training and other ways. Strengthen the cooperation with local accounting firms and strengthen the opportunities for students' practice and training.

Zheng Meiqing, Liu Shuye & Yan Yukang (2021) took the teaching reform of accounting major in Shanghai Donghai Vocational and Technical College as an

example. Facing the particularity of talent demand in small and micro enterprises and the differences between accounting education and employment in higher vocational colleges, the quality of talent training has been continuously improved through measures such as reestablishing talent positioning, re constructing training system, introducing international CcpA standards, re shaping teaching mode, re establishing teaching resources, and severely damaging training methods. In 2018, the teaching reform achievements of accounting major were awarded the special prize of Shanghai vocational education teaching achievements and the first prize of national vocational education teaching achievements.

Sun Yan (2022) needs to improve the cultivation of students' innovative thinking and innovative ability to the same level as the cultivation of basic theory and basic knowledge when designing the teaching objectives of "management accounting", so as to stimulate the pioneering and extensible thinking and cultivate the ability to analyze and solve problems. These new management accounting knowledge and methods need to be properly added to the course teaching, and attention should be paid to the detailed introduction combined with practical work problems and specific application scenarios. The contents of the three courses of management accounting, financial management and cost accounting are adjusted to integrate teaching resources. According to different teaching objectives, case teaching can be divided into two types: lead-in case teaching and discussion case teaching.

Xie Yingzi (2022) faced with the two new situations of management accounting career development and education industry and the current situation of talent training in higher vocational education, she believed that the management accounting course, which effectively integrated the characteristics of wisdom education, ideological and political education, talent training in vocational education and new changes in disciplines, was of great significance. First, based on the traditional teaching content and combined with the application guidance of management accounting, the teaching content of management accounting is updated into eight learning situations, namely strategic management, budget management, cost management, operation management, investment and financing

management, performance management, risk management and management accounting report. In teaching methods, case teaching method, project task teaching method, simulation teaching method and demonstration teaching method are introduced; The third is to integrate advanced modern information technology into all teaching processes in teaching means to realize diversified teaching. The fourth is to integrate values, political beliefs, corporate culture and professional ethics education into the curriculum design through case analysis, so that students can acquire critical thinking and understand correct values.

Teaching evaluation

Bai Luzhen & Qiu Yulian (2019) believe that to cultivate management accounting talents with both knowledge and ability, it is necessary to build diversified assessment methods to comprehensively evaluate students' theoretical knowledge, professional skills and professional quality. As for the composition of grades, we should increase the proportion of usual grades and comprehensively assess students' learning process and learning effect. As far as the usual assessment is concerned, diversified tests can be carried out in the form of homework assignment, classroom speech, case analysis, group discussion, course training, extracurricular practice, course paper, etc., so as to objectively and comprehensively evaluate the comprehensive quality and ability of students.

Mo Hong (2020) believes that the traditional assessment and evaluation methods only focus on theoretical knowledge, ignoring practice and training. Considering that management accounting is a highly applied and practical discipline, the proportion of usual assessment can be appropriately strengthened. In the course teaching, the assessment is carried out by means of daily homework, case analysis, course training, extracurricular practice and research reports. This evaluation method pays attention to students' learning process, can objectively, comprehensively and dynamically reflect students' learning situation, and is also conducive to stimulating students' participation in the course and attention to practical teaching.

Xu Xiao, Liu Shan & Li Yucun (2020) believe that the online and offline hybrid teaching mode based on the network teaching platform should make full use of

students' pre class, in class and after class time, so the teaching evaluation should also run through the whole process of pre class, in class and after class, and reconstruct a diversified teaching evaluation system. Teachers can use the students' learning behavior data recorded in the network teaching platform to combine process evaluation with summative evaluation, in class evaluation with extracurricular evaluation, teacher evaluation with student evaluation, and finally form an objective and diversified comprehensive evaluation for each student.

Sun Yan (2022) proposed that the rational application of teaching evaluation can not only provide a perfect direction for subsequent teaching, but also help to form a positive incentive and guidance for students. Considering the strong practicality of "management accounting" course, teachers need to change the single teaching evaluation method. For example, on the basis of the original final unified examination test and attendance statistics evaluation indicators, it is also necessary to add evaluation indicators such as in class test, homework completion, performance of practical teaching links, and practical operation ability to clarify the proportion of each indicator in the overall evaluation results, so as to obtain the final score of the course, so that students and teachers can pay attention to and actively participate in various teaching links and learning activities.

Li Xuan (2022) proposed to improve the existing evaluation and assessment mechanism and comprehensively assess students' professional theoretical knowledge, skills, professional quality, practical ability and application ability. The assessment and evaluation of students' usual performance can be carried out in many forms, such as classroom attendance, classroom speech and participation in classroom activities, course training, homework completion, group learning task completion, extracurricular practice, etc. For the assessment of final examination results, the proportion of case analysis questions should be increased in the final examination papers. In addition, the assessment of students is not limited to the assessment of teachers, but also should increase the assessment content from different perspectives, such as students' self-assessment, students' mutual assessment, and internship enterprise assessment.

Liu Qiaoying (2023) proposed that with the continuous innovation of modern information technology and the continuous expansion of wireless network coverage, the popularity of intelligent mobile terminals among students is high. Teachers make full use of the information platform, release courseware, videos and other learning resources before class, guide and improve the course content during class, and give timely information feedback after class, so as to give full play to the role of "Internet+" teaching. At the same time, the course process can be recorded through the information teaching platform, and the process assessment can be carried out for students.

Ye Ting (2023) proposed that the score of the corresponding "1+x" certificate examination should account for 60% -70% of the final score of the course. The theoretical knowledge examination of the course is changed from the original written examination to the examination of the corresponding actual post operation. In addition, if students pass the "1+x" exam, they can accumulate corresponding scores in the credit bank and credit the scores of courses required in some academic certificates. For example, in the course of management accounting, industry experts and part-time teachers of enterprises can be invited to jointly evaluate the students' practical operation process, so that the training of students can meet the needs of enterprises.

Research on the Integration of modern information technology and teaching of accounting courses

Definition

Cao Zhifeng (2020) believes that modern information technology is rapidly building an open, networked and interactive classroom teaching system. The large-scale open online classroom teaching mode, represented by MOOC, micro video and flipped classroom created with modern information technology as the core, is leading the structural change of modern education concept and classroom teaching, and undertaking the major mission of reconstructing classroom teaching.

Lai Jinming and Liu Xingxin (2020) believe that the construction of intelligent teaching environment has become a key area for higher vocational colleges to explore the deep integration of modern information technology and education and teaching. They study and build a curriculum system of accounting major, which includes seminars, case analysis courses and cutting-edge courses, and breaks through the traditional teaching organization form and time and space constraints, under the guidance of big data, Internet of things, cloud computing and mobile Internet. Innovate the mechanism of academic assessment and evaluation, and pay attention to the comprehensive quality of students.

Jia Xuefeng (2020) believes that the development of modern information technology in education has brought disruptive changes to the education ecology. The vigorous development of new technologies such as situational awareness technology, virtual reality technology, augmented reality technology and touch technology has created a rich and authentic, multi-sensory participation and multi-channel interactive experiential learning environment for students. The development from online education to mobile learning and ubiquitous learning, from open education resources to large-scale online courses, has built new learning ecosystems such as smart learning environment, ubiquitous learning environment and mobile learning environment to meet the needs of students at different levels and improve students' learning ability.

Ju Xiusha (2021) In the teaching of accounting courses in higher vocational colleges, we should make full use of modern teaching methods while using traditional teaching methods. Modern teaching methods can vividly and intuitively display the businesses and cases involved in various accounting positions in the classroom in the form of audio, video, images and charts, so as to better help students understand and master them. We should use modern teaching methods to update the teaching content and adjust the teaching material content in time, so as to ensure that the knowledge and skills learned by students are the job needs of enterprises.

Han Xue (2021) believes that in the process of accounting teaching reform in higher vocational colleges, it is first necessary to change the teaching concept and introduce modern information equipment to promote the development of teaching informatization; Secondly, we need to formulate a reasonable accounting talent training strategy according to the needs of enterprise talents, and form a good development mode of school enterprise docking; Finally, we should establish a characteristic accounting teacher team to enrich the curriculum construction of accounting teaching and improve the teaching level of the school.

Wun Jingning (2021) proposed that the in-depth integration of modern information technology and classroom can take many forms, such as the use of mobile clients, wechat official accounts, portal websites and so on to realize the sharing of teaching resources; The interactive classroom teaching mode of virtual and reality based on emerging technologies in the intelligent era, such as VR, AR, Mr, has produced a variety of classroom teaching situations, such as "virtual classroom", "virtual simulation practice center"; Promote the development of online courses by using network technology and we media technology, and launch online open classroom teaching such as MOOC and wechat.

Xu Qiyu (2022) believed that in the 2035 of China's educational modernization released by the general office of the State Council in 2019, one of the ten key tasks is to accelerate the reform of talent training mode with modern information technology. Since then, the theme of education has changed to "accelerate the modernization of education and build an education power", "Internet+", "big data", "artificial intelligence" and other words have become popular in the field of education in China. From micro lecture, MOOC and online education, course video, to the recent emergence of VR, AR technology and artificial intelligence, are the manifestations of the deep integration and innovation of modern information technology and education and teaching.

Wang Huiyuan (2023) believes that the deep integration of modern information technology and classroom teaching has changed the status relationship between the subject and object of education. The new media represented by the

Internet and mobile phones have profoundly changed people's way of life, production and even learning. Teachers' teaching is no longer the only way for students to acquire knowledge. Students can obtain learning resources and required content through various network platforms, which provides more possibilities for equal dialogue and mutual communication between teachers and students.

Importance

Su Chang (2021) believes that with the vigorous promotion of information-based teaching, micro class has become an indispensable tool in Higher Vocational Teaching with its advantages of brevity, prominent theme and strong pertinence. The teaching task of "accounting informatization" course is to cultivate students into high-quality application-oriented talents who can be competent in accounting and accounting affairs management under the information environment. The teaching mode of Accounting Specialty in Higher Vocational Colleges Based on micro course was tested in two classes of Accounting Specialty in Jiangsu Vocational and Technical College of Finance and economics. The results show that it can effectively improve the teaching efficiency and quality.

Zhang Bo (2021) believes that the integration of 5g technology and accounting practice teaching in higher vocational colleges is a two-way and dynamic integration. It brings new opportunities in teaching philosophy, teaching methods, teaching means, teaching resources and teaching environment for accounting practice teaching in higher vocational colleges. However, it faces many practical challenges. Only on the basis of actively seizing the opportunity to meet the challenge and formulating reasonable countermeasures can we promote the development of accounting practice teaching in higher vocational colleges.

Zhong Jiaming (2022) believes that modern information technology plays an important role in making up for the limitations of traditional teaching, innovating the teaching mode, cultivating students' dialectical, innovative and other high-level thinking and developing the core quality of the discipline. The deep integration of modern information technology and classroom is not only the requirement of the

times for talent cultivation, but also the inevitable choice to realize the modernization of education.

Su Qianqian, Sha Bingrui and Jiang Yan (2022) suggest that higher vocational colleges' accounting majors may adopt modern information technologies to embed practical teaching and management into smart platforms. It will enhance management efficiency. Additionally, introducing assessments from enterprises, industries and society into the teaching evaluation system helps build a robust evaluation mechanism and sustain the fairness and openness of practical teaching.

Da Tanhui (2024) believes that with the popularization and application of new AI technologies such as big data and cloud computing in the accounting field, promoting the transformation of the accounting industry to digital and intelligent, enterprises have put forward higher requirements for the professional quality of accounting personnel. In the context of the popularity of big data, it is of great significance to focus on the research of enterprises with better implementation of intelligence and industry demonstration and leading role, and introduce the technology, knowledge and standards of the production line into the talent training process.

Content or composition

Mo Hong (2020) believes that for management accounting courses, teachers can use smart teaching tools such as rain classroom, superstar learning com and Tencent classroom to teach. At the same time, teachers are encouraged to develop quality courses and share them. Thirdly, teachers guide students to learn by using online course teaching resources such as China MOOC and Xuetang online. Finally, the teaching of management accounting involves a lot of data. Teachers should teach students to skillfully use Excel, SPSS and other software to deal with management accounting problems.

Hu Zhirong, zhao Xiaogang & Wang Luo (2020) believe that "rain class" is an online teaching tool that fully reflects the combination of modern information technology and teaching art. Based on "rain class", the mixed teaching of audit practice course is carried out, and the whole process of teaching objectives, teaching

content, teaching methods, teaching process, teaching evaluation and teaching assessment is designed. The teaching content is mainly edited according to the format and template required by "rain class", including preview courseware (pre-test courseware), in class courseware (real-time classroom detection), and post test courseware. The teaching method is to download "rain class" and carry out teaching activities through computers or mobile phones. The teaching process is 10 minutes before class -40 minutes during class -20 minutes after class. Teaching evaluation follows the principles of process assessment and formative assessment.

Xu Xiao, Liu Shan & Li Yucun (2020) explored the teaching mode of deep integration of modern information technology and accounting course. The financial accounting course in higher vocational colleges should take the network teaching platform+teaching resources+teacher service as the educational concept. Teachers make full use of the network teaching platform, such as smart Vocational Education, superstar, cloud class and rain class, to organize teaching activities. By publishing teaching video courseware resources on the network platform, students can watch and preview on their mobile phones in real time, and interact in class. After class, the teacher releases the homework through the network teaching platform, sets the homework payment time, and evaluates the students' learning effect.

Han Xue (2021) believes that the Internet+era can bring more modern information equipment, more accounting education resources and better talent training mode to higher vocational colleges, which is conducive to improving the competitiveness of accounting teaching in higher vocational colleges; It is conducive to enriching the mode of accounting teaching in higher vocational colleges, obtaining more real and effective data through the Internet, allowing students to simulate accounting training through real data, and using the new accounting software system for data analysis and collation, which is conducive to establishing students' cognitive ability of accounting teaching.

Wang Mingming (2022) combined with the reform practice of MOOC's financial accounting course in higher vocational colleges, higher vocational colleges and professional teachers need to combine the teaching practice and students' learning

needs, innovate the curriculum practice strategy, optimize the curriculum teaching methods, reasonably develop and reasonably use MOOC resources with the help of modern information technology, and improve the teaching evaluation system, so as to improve the teaching effectiveness and promote the development of students.

Zhang Zhiping, Kong Weipan & Li Wenting (2022) took the course of basic accounting as an example to carry out the design and application of hybrid teaching mode for basic accounting theory and practice with the help of MOOC, which helped improve the teaching quality of higher vocational education and optimize the teaching reform results. This mode is divided into six parts: teaching objectives, problem orientation, video resource design, emphasis on key and difficult points, teaching strategies and teaching evaluation.

Liu Liang (2023) designed the teaching strategy and teaching evaluation mode based on the two-way interactive network teaching platform based on the integration platform of superstar learning com, Xindao TTC learning and training competition and classin platform, and applied it to the students majoring in basic accounting in higher vocational colleges. Through the establishment of close teaching links between teachers and students, students and students, the teaching mode is optimized, and the teaching effectiveness of the basic accounting course in higher vocational colleges is continuously improved by defining the teaching subject, innovating teaching methods, realizing online and offline integration and interaction, and optimizing teaching evaluation.

Zeng Mengyao (2023) studied the current teaching situation of basic accounting in higher vocational colleges, and explored a new teaching mode of basic accounting in Higher Vocational Colleges through the induction of resources and the construction of online and offline hybrid teaching mode. The contents are as follows: first, integrate the teaching content with work tasks. The setting of tasks needs to consider the latest development trend of accounting major, including the revision of accounting laws and regulations, tax laws, etc. The second is to sort out the teaching videos related to basic accounting on the learning website, or the related educational resources such as micro class, MOOC and video animation for the

construction of basic accounting courses. Third, the whole process of teaching evaluation includes the construction of teaching evaluation system among teaching procedures such as teaching content, teaching objectives and teaching plans. The teaching evaluation system can feed back the students' learning situation in the classroom.

Principles

Su Chang (2021) proposed that micro lecture is the main teaching tool. Teachers need to fully understand the teaching content, grasp the key and difficult points, and fully consider the following aspects: first, students' acceptance. The production of micro lecture should fully consider the students' psychological characteristics and understanding ability, simulate the working environment by animation, simulation and other ways, and actively integrate the learning content. Second, the duration should be controlled within 10 minutes. The third is to make micro lessons in a concise and understandable way by highlighting the theme.

Su Qianqian, Sha Bingrui & Jiang Yan (2022) believe that modern information technology can not only promote higher vocational colleges to obtain teaching resources more quickly, which is conducive to the development of practical teaching, but also strengthen the connotation construction and meet the individual development needs of students. At present, higher vocational colleges not only need to improve students' hands-on ability, but also need to reflect the adaptability and innovation ability of the post. Rational use of modern information technology can optimize the practice teaching methods, present the characteristics of vocational education, enhance the quality of teaching, and cultivate innovative and compound talents.

Wang Mingming (2022) believes that the key points of the application of MOOC in the teaching of financial accounting course in higher vocational colleges are as follows: first, the content of MOOC video is simple, and the length of time is 10 to 20 minutes; Second, pay attention to the cultivation of students' autonomous learning ability; Third, strengthen the communication and interaction between teachers and students, and improve the activity of classroom teaching.

Taking accounting courses as a case study, Wang QiuHong, Lu Ling and Wang Yili (2024) state that the shift from teacher-dominated to student-oriented teaching demands attention to learning content, learning methods and learning effectiveness. It is essential to develop students' self-exploration and autonomous learning skills. The combination of modern information tools and the OBE concept in blended teaching facilitates teacher-student interaction and builds students' problem-solving competencies.

Da Tan hui (2024) holds that in the era of big data, higher vocational colleges shall dynamically adjust the training orientation of accounting talents in light of new technologies, new industries and new business forms. Meanwhile, vocational skill level certificates need to keep pace with the latest industrial development and requirements. Extensive application of big data and other technologies in all links of accounting and financial management can better support enterprises' production, operation and decision-making.

Xie Weijia (2025) argues that the widespread adoption of automation and intelligent technologies has led to a declining demand for traditional accounting professionals. In contrast, there is a shortage of intelligent accounting talents proficient in both financial analysis and modern information technologies. Therefore, it is necessary to reform the curriculum system and teaching models and improve teachers' professional competencies. In this way, vocational education can better cultivate intelligent accounting talents who meet the needs of modern enterprises.

Process or steps

Hu Zhirong, Zhao Xiaogang & Wang Luo (2020) conducted an empirical study on the mixed teaching of audit practice course in higher vocational colleges using "rain class". First of all, the preview courseware is pushed through the "rain class", and students need to preview and test online. Secondly, in the 40 minute teaching process of the traditional classroom, the "rain classroom" teaching mode is opened, and the courseware will be synchronized to the students' mobile terminal. The teacher can send test questions on site, and the students can answer questions online or send barrages. After class, the teacher will receive the "classroom report

reminder", including students' attendance in class, students with excellent classroom performance, students with early warning in class, and statistics of classroom test exercise data. Finally, after class, students can carry out chapter consolidation exercises for about 20 minutes by pushing after class tests.

Zhao Jun (2021) can enjoy the classroom revolution brought about by new technology in the teaching of accounting courses based on the student-centered and teacher led "1+x certificate" system. Before class, students can preview the course video on the intelligent platform, and teachers can view the results of students' preview, prepare lessons and solve problems in the process of students' Preview. During the class, students are guided to operate their skills, the platform automatically scores, and the learning effect is detected. Teachers can analyze the results submitted by students, and arrange key analysis and explanation contents according to the feedback results. After class, students complete the intelligent massive skill point training on the intelligent cloud platform. The teacher reviews the students' training results, judges the students' mastery, and follows up with guidance.

Zhang Zhiping, Kong Weipan & Li Wenting (2022) took the basic accounting course as an example, and used MOOC to design the teaching of the course: the two stages of pre class preparation and teaching work. Among them, the preparation work before class includes the development of mutual learning, classroom activities, course assessment, and learning group management system. The teaching work includes three stages: before class, during class and after class. Before class, set a small goal for each class preview, do a good job in the preview guide, and clarify the preview task; Make online learning resources, release them on time, and guide students' online learning. During the class, the student group will report on the preview, and the teacher will explain and answer questions through cases; After class, check the scores of each student's tests, assignments, examinations, class discussions, and total scores according to the progress, so as to make the score become the standard of personalized evaluation, which is convenient for guiding students' key and difficult points in the future.

Zeng Mengyao (2023) believes that the online and offline mixed teaching mode of basic accounting in higher vocational colleges is to release teaching content by using MOOC, wechat and other platforms before class, and then use the flipped classroom in the teaching process. Before class, teachers need to release the theme teaching video content on the MOOC and wechat resource platform based on knowledge points according to the needs of students; The flipped classroom mode is adopted in the class. The roles of teachers and students are exchanged to guide students to become the main body of teaching activities. In addition, practical teaching can be carried out through group cooperation; After class, on the rain classroom platform, check the students' online learning progress, discussion participation, knowledge mastery and other situations to evaluate the students' learning situation, and combine the evaluation results with the final exam results.

Yu Youcai (2023) believes that rain class and cloud class are a way of integrating modern information technology into professional teaching. Accounting Teaching in higher vocational colleges can use modern information teaching methods to enhance classroom vitality, covering every teaching link from pre class to in class to after class. Using teaching aids such as rain class and cloud class, teachers can push courseware and materials with MOOC videos, exercises, voice, etc. to students at any time, realize real-time interactive question answering and bullet screen interaction in the classroom, realize timely communication and feedback between teachers and students, extend the classroom space in professional teaching, and improve students' sense of classroom participation. Teachers can also conduct diversified teaching through other teaching methods, such as flipped classroom, simulation company, etc.

Liu Liang (2023) took the basic accounting course in Higher Vocational Colleges as an example. Under the guidance of the problem-solving teaching mode, he skillfully used the network teaching platforms such as superstar learning link, new road TTC learning and training competition integration platform and classin to design all links before, during and after class. Pre class preview is realized through the platform, and online communication, tutoring and Q&A and other related functions

are used to communicate with teachers, so as to realize the discussion of problems and the solution of difficult problems. In class, teachers can conduct instant tests and obtain test results in real time. In the platform, cases can be used to create problem situations for students. Students can group themselves and choose simulation roles (general manager, accounting supervisor, cashier, etc.) to complete situational tasks such as filling in forms and bank settlement, so as to achieve the goal of efficient learning for students.

Application of situational cognition theory in teaching and learning

Situated Cognition Theory emphasizes that knowledge is constructed by individuals through interaction with the social environment. It refers to the active process of building knowledge systems via practice, observation, reflection and other activities within authentic or simulated contexts that connect learners to concrete real-life scenarios. Guided by Situated Cognition Theory, teachers can diversify the types of contextual creation to boost teaching effectiveness, offering students richer and more personalized learning experiences, facilitating knowledge acquisition and cultivating their critical thinking and inquiry capabilities. A growing number of scholars have introduced this theory into curriculum instruction. By restructuring teaching logic and innovating instructional strategies, educators can address the predicaments of traditional teaching, thereby improving teaching quality and fostering students' vocational competency development.

Jiang Qiao (2019), based on the Situational Cognition Theory, believes that the rational creation of teaching situations is one of the important teaching strategies to improve the effectiveness of geography teaching. The creation of teaching situation should follow the principles of effectiveness, harmony, inspiration and diversity. Intuitive situation is conducive to stimulate students' interest in learning; The problem situation is conducive to triggering students' cognitive conflict and stimulating the creativity of thinking; The cooperation situation is conducive to cultivating the community of practice and promoting interactive communication; Exploring the situation is conducive to developing students' innovative potential; Life

situation helps to cultivate students' practical ability and promote the transfer of knowledge.

Wen Yingxi (2024) explores the effective integration of virtual reality technology into foreign language teaching based on Situated Cognition Theory. Characterized by immersion, interaction and imagination, virtual reality technology not only allows users to observe virtual scenarios, but more importantly, enables them to interact with objects within such scenarios, ultimately facilitating their construction of cognition of the real world and broadening their cognitive horizons.

Lin Jiajing (2025) argues that the deep integration of intelligent technology into teaching based on Situated Cognition Theory can stimulate students' intrinsic interest and learning competence. Supported by intelligent technologies, teachers can introduce richer and more diversified learning resources and adopt virtual reality technology to optimize the effect of context construction, thereby building more authentic learning environments and enabling students to achieve an immersive experience.

Chen Jiamin (2025) proposes that based on Situated Cognition Theory, strategies for constructing scientific education contexts can be formulated from four core elements: context, activity, community and meaning construction. Such strategies include integrating diverse resources, clarifying activity procedures, expanding participant groups and encouraging communication, so as to improve the quality of science education and cultivate students' scientific literacy and innovative capabilities.

Xia Aimin & Wang Qin (2025) hold that interactive textbook illustrations grounded in Situated Cognition Theory can effectively improve learners' situated cognition, knowledge construction and aesthetic experience. Innovative strategies including contextualized design, interactive experience and collaborative learning are capable of delivering richer, deeper and more personalized learning experiences for students.

Li Fangshun (2025) argues that based on Situated Cognition Theory, modern information technology should be integrated into teaching. Teachers can construct a

wide variety of instructional contexts to display obscure physical concepts and phenomena to students in an intuitive and vivid way, thereby enriching students' cognitive experience and stimulating their learning motivation and creativity.

Related Researches

Xie Shilei (2020) analyzed the challenges posed by modern information technologies such as artificial intelligence, blockchain, cloud computing, and big data to the accounting profession and proposed suggestions from five aspects: curriculum system, teaching content, faculty team, diversified teaching platforms, and integration of industry, academia, and research. In the adjustment of the curriculum system, the basic idea of "focusing on professional ability cultivation and using information technology as the carrier" should always be maintained; in terms of textbook content, it is necessary to not only explain the basic principles of professional knowledge in various disciplines but also reflect the specific application of information technology in practice. In teaching methods, emphasis should be placed on the specific application of information system software such as ERP systems. Additionally, a diversified and intelligent teaching platform can be built to seamlessly integrate the learning of professional knowledge with the application of information technology.

Gong Yifei, Li Jialing, Li Peiyue et al. (2020) analyzed the current difficulties in accounting talent cultivation and proposed a path for cultivating managerial accounting talent in the era of intelligent finance from five aspects: curriculum system adjustment, teaching method improvement, faculty team building, innovation practice platform construction, and comprehensive evaluation system improvement, by establishing a managerial accounting talent career competence model. In the era of intelligent finance, the principle of "persisting in talent-driven development and overall advancement" should be adhered to, and efforts should be made in collaboration with research institutions, enterprises, and both on-campus and off-campus mentors to explore new paths for the cultivation of managerial accounting talent.

Wang Aiguo & Niu Yanfang (2021) pointed out that some Chinese universities have successively piloted reforms in intelligent accounting talent cultivation, focusing on the deep integration of accounting knowledge and modern emerging technologies. Based on summarizing the pilot experience of intelligent accounting major construction and talent cultivation programs at Shandong University of Finance and Economics, the basic ideas and main approaches for the curriculum design of intelligent accounting were introduced. The logic of intelligent accounting curriculum design should pay special attention to four issues: clarifying the training objectives of accounting talent; establishing interdisciplinary course clusters; selecting hybrid models of intelligent technologies and accounting courses; and fully utilizing class hours and credit resources to organize courses.

Gao Ying (2022) cited the speech by Chen Baosheng, the Minister of Education of China, at the 2020 International Conference on Artificial Intelligence and Education, which emphasized that "advancing educational modernization requires focusing on the application of new technologies to promote innovation in teaching methods." It is believed that vocational bachelor's degree management accounting teaching should explore modern teaching methods based on SECI theory and mobile learning terminals, such as action learning methods. Innovations in modern teaching models include measures such as heterogeneous team group allocation, coupling job requirements by drawing on STC and CBE models, establishing project-led three-dimensional case libraries, and "action learning empowerment stations" to improve teaching quality.

Zhao Jianmei & Ouyang Caiyue (2023) proposed that to meet the knowledge and ability requirements of financial and accounting professionals in the digital and intelligent era, the following should be achieved: First, traditional teaching content should be restructured and digitally transformed. Second, a "research-based learning" teaching model should be built, emphasizing student-centeredness and guiding students to use modern information technology tools and resources to improve learning efficiency. Third, elements such as ideological and political morality and technical ethics should be organically integrated with professional course content.

Qiu Ying (2024) argued that artificial intelligence technologies represented by ChatGPT can effectively improve teaching conditions and provide a technical basis for realizing student-centered teaching practices, thereby changing the traditional accounting teaching model in universities. Therefore, university accounting education should be adjusted in the following aspects: First, adjust the curriculum to integrate courses related to ChatGPT and related courses to improve communication skills. Second, build smart classrooms with ChatGPT and other technologies to achieve student-centered accounting classroom teaching. Third, leverage the intelligent platform advantages of ChatGPT to construct high-quality digital accounting teaching resources.

Song Haitao, Gao Wei & Tian Shengyu (2024) proposed specific paths for the reconstruction of the management accounting curriculum system in the digital economy era: First, in the management accounting teaching goal system, set knowledge goals, ability goals, and quality goals. Second, in the management accounting curriculum content system, integrate traditional management accounting content knowledge points, increase digital technology-related content and cases, and emphasize the integration and application of interdisciplinary knowledge. Third, in terms of management accounting teaching methods and means, introduce modern teaching methods and use digital teaching tools to integrate traditional and digital teaching methods. Fourth, in the management accounting course evaluation system, establish a diversified evaluation system and introduce industry certification and professional qualification standards to meet market demands.

Jin Sumin (2024) argued that under the background of big data, professional teaching reform combines the "data thinking" concept with the accounting talent cultivation program, integrating "data thinking" training throughout the entire process of professional course teaching, and designs it overall according to the "goal layer—implementation layer—support layer." First, in the goal layer, based on demand orientation (such as policy requirements, job demands, and professional positioning), the goals are broken down into knowledge goals, ability goals, and quality goals. Second, in the implementation layer, multiple teaching strategies are integrated and

promoted. Finally, in the support layer, multiple dimensions such as systems, platforms, teams, and textbooks provide support. This teaching design can promote the deep integration of professional knowledge and data thinking step by step.

Tian Gaoliang, Zhang Junrui, Wang Fangjun & Zhou Fang (2024) argued that with the rapid development of new-generation information technologies such as big data, artificial intelligence, mobile internet, cloud computing, blockchain, Internet of Things, metaverse, and generative large language models, significant challenges have been brought to accounting theory and practice as well as accounting talent cultivation. Against this backdrop, the cultivation of an intelligent accounting talent ecosystem requires innovation in three areas: First, conceptual innovation, breaking traditional talent cultivation concepts and establishing a collaborative ecosystem for intelligent accounting talent cultivation through industry-education integration. Second, paradigm innovation, guided by teaching reform projects, to comprehensively transform the teaching paradigm to adapt to the accounting talent cultivation ecosystem. Third, mechanism innovation, activating the potential of all elements and creating a positive feedback mechanism to encourage the intelligent accounting talent cultivation ecosystem.

Li Linna & Zhao Dazhi (2024) argued that under the background of educational digitalization, the practical teaching system of vocational colleges consists of multiple elements, including teaching objectives, content, methods, environment, resources, and management. These elements are interrelated and together form a complete practical teaching system. The practical path of this system includes: constructing a digital teaching environment, developing digital teaching resources, innovating teaching models and methods, improving teaching management mechanisms, strengthening teacher training, optimizing and reconstructing the curriculum system, and innovating evaluation mechanism reforms.

Yang Zhonghai, Li Yingmei, Li Tan & Song Haitao (2024) proposed to advance the digitalization of accounting education and cultivate digital professional skills and professional ethics among accounting talents by implementing the OBE (Outcome-Based Education) concept (based on financial statement analysis), using the business

intelligence software Power BI, focusing on real scenarios of listed companies, and integrating teacher-student interactions both in and out of the classroom into a "five-in-one, two-integration" teaching system. The "five-in-one" integration of teaching content in the "Accounting" course refers to organically incorporating five aspects of teaching content—ideological and political elements, basic accounting knowledge, fundamental financial statement analysis, business intelligence analysis technology, and real cases of listed companies—into the course teaching. The "two-integration" refers to fully utilizing digital technology to integrate teaching and learning, extending the boundaries of teaching and learning in terms of time and space, and achieving comprehensive teaching goals.

In summary optimizing accounting teaching and talent cultivation in higher vocational colleges with modern information technology has become a hot topic in domestic accounting education reform. Existing studies cover extensive fields with diverse research perspectives and increasingly standardized research methodologies. In terms of research subjects, most literature focuses on curriculum optimization, teaching method reform and smart classroom construction from the perspective of teaching improvement to boost classroom quality. However, few targeted studies integrate modern information technology and smart platforms into an integrated teaching model tailored to the learning characteristics of accounting majors at Yunnan's higher vocational colleges. In terms of research content, relevant findings are scattered across problem analysis, curriculum reform, IT-based teaching, integration of courses, posts, certificates and competitions, and diversified assessment. Few systematic modern teaching models centering on practical ability improvement have been developed based on Yunnan's regional characteristics to coordinate curriculum restructuring, classroom instruction and practical training.

Therefore, grounded in the reality of higher vocational colleges in Yunnan, this study focuses on cultivating students' vocational competence for accounting posts and develops a customized modern teaching model for local accounting majors. Key implications drawn from literature review are listed below:

1. The top-level design of the teaching model aligns with national accounting industrial standards and job requirements of local enterprises in Yunnan. Specifically, teaching design complies with accounting competency criteria and the 1+X vocational certificate system to meet the staffing demands of small and micro enterprises in Yunnan and improve students' adaptability to real-world accounting jobs.

2. Drawing on existing research on the integration of courses with vocational posts, qualification certificates and skills competitions, the curriculum system is revised to eliminate redundant course content, outdated textbooks and disconnection between theoretical knowledge and practical work, thus realizing in-depth alignment between curriculum content, job demands, vocational certificates and accounting contests.

3. A three-stage blended teaching procedure is formulated based on previous IT teaching research. Supported by smart platforms such as Rain Classroom, BlueMOOC, TTC training platform and MOOC resources, the whole teaching process includes pre-class resource distribution, in-class situational exploration and case discussion, as well as after-class practical consolidation to implement situated teaching.

4. A dynamic assessment module is embedded to realize differentiated teaching. Relying on smart platforms to collect multi-dimensional data including preview performance, classroom participation, practical training results and periodic assessments, the model abandons the over-reliance on final exam scores. Students receive personalized tutoring according to their comprehensive ability data.

Chapter 3

Research Methodology

In order to design and evaluate a set of modern teaching model suitable for accounting courses in vocational and technical colleges in Yunnan Province, this study was divided into three phases, each of which would employ a different research methodology.

The first phase aims to implement the first research objective: To study the teaching status of accounting courses in vocational and technical colleges in Yunnan Province.

The second phase aims to implement the second research objective: To design a modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province.

The third phase aims to implement the third research objective: To evaluate the modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province.

Phase 1: To study the teaching status of accounting courses in vocational and technical colleges in Yunnan Province

1. Research steps

The phase 1 consists of six steps, as detailed in the framework diagram below.

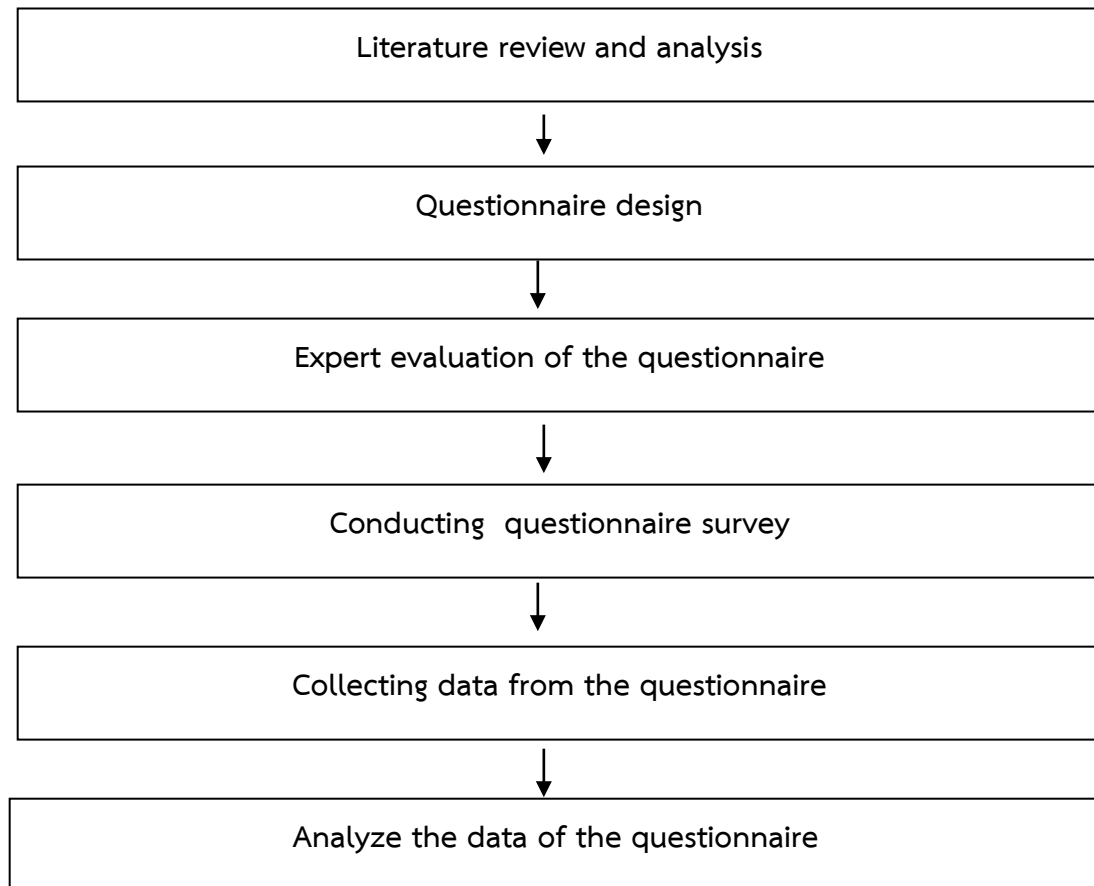


Figure 3.1 Framework diagram of Phase 1

1) Literature review and analysis: through extensive collection and analysis of relevant literature, I gained a deeper understanding of the teaching situation of accounting courses in vocational and technical colleges in Yunnan Province, and identified existing problems and possible coping strategies.

2) Questionnaire design: Based on the problems in teaching accounting identified in the literature review, a questionnaire containing various types of questions was designed to further explore these problems. Details of the questionnaire can be seen in Appendix C1.

3) Expert evaluation of the questionnaire: 5 experts in the field were invited to review the content of the questionnaire using the IOC method to ensure

the scientific validity and effectiveness of the questionnaire. These 5 experts must fulfill the following 2 conditions. (1) Requirement of professional background: the experts should have an academic background in accounting or related financial professions, usually with a master's or doctoral degree. (2) Requirements of industry experience: they have rich experience in teaching or practicing accounting, have been teaching accounting courses in vocational and technical colleges or higher education institutions for more than 5 years, and understand the current status and needs of accounting education.

4) Conducting a questionnaire survey: Convenience sampling method was adopted to select 278 teachers teaching accounting courses in 10 colleges in Yunnan Province to conduct a questionnaire survey and collect their views and feedback.

5) Collecting data from the questionnaire: summarize and organize the data collected from the questionnaire survey and prepare for analysis.

6) Analyze the data of the questionnaire: analyze the data of the questionnaire survey in depth, extract the key information, and understand the current situation of teaching and the existing problems from it.

2. Population / Sample Group

The population: The total population comprises 352 full-time accounting teachers from 10 vocational colleges in Yunnan Province.

The Sample Group: The final valid sample size is 278 teachers (300 teachers were selected via simple random sampling for questionnaire distribution, and 278 valid questionnaires were retrieved).

3. Research Instruments Research Tools

1) Literature Review Tool: online databases, monographs, journal networks and other resources were used to collect and analyze information related to teaching accounting courses in vocational and technical colleges. These resources include academic search engines such as CNKI, Google Scholar and other international academic resources.

2) Questionnaire survey tools

(1) Questionnaire design: Based on the collected literature, create a questionnaire using WJX. The questionnaire is mainly designed from five dimensions, and each dimension contains a variety of specific questions that teachers have in teaching.

(2) Distribution of the questionnaire: The questionnaire was distributed using the online platform WJX, which greatly facilitated data collection and subsequent data analysis.

(3) Statistical Analysis: The KMO (Kaiser-Meyer-Olkin) test and Bartlett's test of sphericity were employed to conduct suitability analysis on the questionnaire data, so as to determine whether the sample data were appropriate for factor analysis.

The KMO test was used to assess the structural validity of the questionnaire. The criteria for interpretation were as follows:

$KMO \geq 0.90$: excellent, highly suitable for factor analysis; $0.80 \leq KMO \leq 0.89$: good, suitable for factor analysis; $0.70 \leq KMO \leq 0.79$: acceptable, qualified for direct analysis in accounting research; $0.60 \leq KMO \leq 0.69$: marginal suitability, remove low-correlation items then retest KMO;

$0.50 \leq KMO \leq 0.59$: unsuitable, eliminate invalid items, revise scale and retest KMO;

$KMO < 0.50$: highly unsuitable, redesign questionnaire items.

Bartlett's test of sphericity was used to examine whether correlations existed among the variables. If the variables were independent of one another, common factors could not be extracted, rendering factor analysis meaningless. When the significance level (p-value) of Bartlett's test of sphericity was less than 0.05, it indicated that significant correlations existed among the variables, and the data were suitable for factor analysis.

3) Expert IOC assessment method: In this study, to ensure the scientificity and validity of the questionnaire, the index of content validity (IOC) method was used for assessment. Specifically, five experts in the field of accounting specialization

were invited to score each question item of the questionnaire. The scoring scale is as follows: -1 indicates disagreement, 0 indicates neutrality, and 1 indicates agreement. Only if the IOC value of a question is 0.6 or more, the item will be retained in the questionnaire; otherwise, it will be excluded.

4. Data Collection

1) Literature data collection: a literature review was conducted to understand the problems and coping strategies of teaching accounting courses in vocational and technical colleges. The literature will provide a theoretical basis for the study and help to understand the development of teaching models and their application in current educational practices.

2) Questionnaire data collection: The questionnaire was distributed through the online platform WJX in 10 colleges in Yunnan Province, and the questionnaire feedback was collected from 300 teachers of accounting courses using the convenience sampling method.

5. Data Analysis

A detailed statistical analysis of the collected data was performed after a questionnaire survey of 300 teachers from 10 vocational and technical colleges in Yunnan Province. For questionnaires, data analysis mainly involves the following simple calculation formulas:

1) Frequency and percentage: Calculate the frequency and percentage of each option to describe the distribution of the teacher's responses to each question.

$$percentage = \left(\frac{f}{n} \right) \times 100\% \quad (3.1)$$

f is the frequency of a specific response,

n is the total number of respondents.

The formula can meet the basic needs of questionnaire data analysis, help summarize the current situation, identify problems and make suggestions for improvement.

2) KMO Test and Bartlett's Test of Sphericity: Statistical software was employed to conduct quantitative analysis of the questionnaire data. The data analysis methods comprised quantitative analysis and content analysis, with statistical results presented in percentages.

To examine the structural validity of the questionnaire and determine whether the sample data were appropriate for factor analysis, this study utilized the KMO (Kaiser-Meyer-Olkin) test and Bartlett's test of sphericity to perform suitability analysis on the questionnaire data. Specifically, the KMO test was used to assess the partial correlations among variables, with values ranging from 0 to 1; the closer the KMO value is to 1, the stronger the partial correlations among variables, indicating greater suitability for factor analysis. Bartlett's test of sphericity was employed to examine whether the correlation matrix among variables was an identity matrix, that is, to determine whether significant correlations existed among the variables.

$$KMO = \frac{\sum \sum_{i \neq j} r_{ij}^2}{\sum \sum_{i \neq j} r_{ij}^2 + \sum \sum_{i \neq j} \alpha_{ij}^2} \quad (3.2)$$

r_{ij} is the simple correlation coefficient between variable x_i and variable x_j ,

α_{ij} is the partial correlation coefficient between variable x_i and variable x_j after controlling the remaining variables.

$$Bartlett = (k - 1) \ln(S^2) - \sum \left[\frac{\ln(S_i^2)}{n_i - 1} \right] \quad (3.3)$$

k represents the number of populations,

S^2 represents the combined variance of all samples (estimated variance of the population),

S_i^2 represents the sample variance of each population,

n_i represents the sample size of each population.

Phase 2 : To design a modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province

1. Research steps

The second research phase is broadly divided into 3 steps, as shown in the figure below.

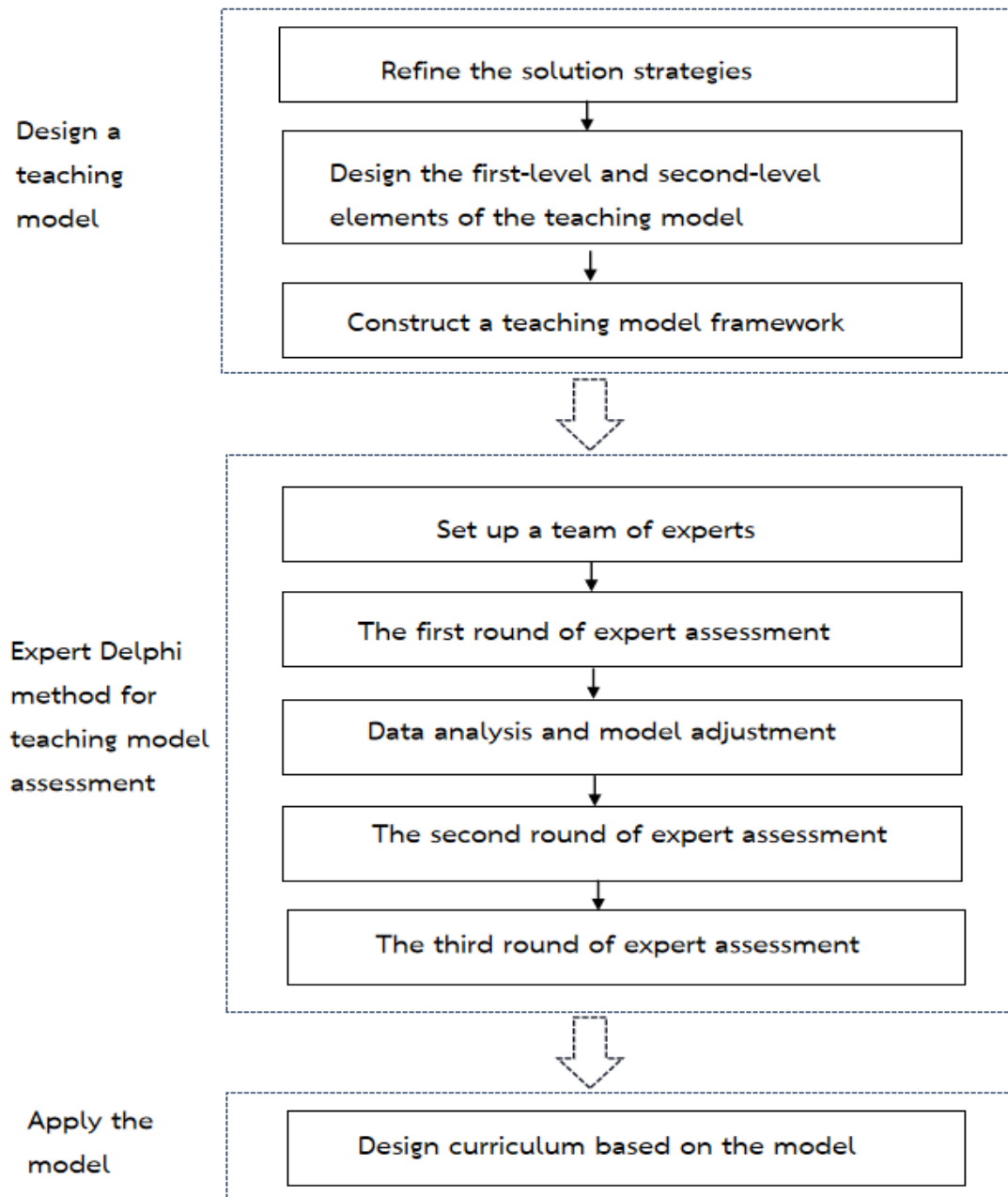


Figure 3.2 Framework diagram of Phase 2

1) Design a teaching model

(1) Refine the solution strategies

The solution strategies for each problem were extracted from the literature, and the strategies were classified and sorted out to form a list of strategies.

(2) Design the first-level and second-level elements of the teaching model

Level 1 elements: According to the overall framework of the teaching model, determine the level 1 elements, such as teaching objectives, teaching content, teaching methods, teaching resources, teaching evaluation, etc. Secondary elements: For each primary element, design specific secondary elements based on the policy checklist. The policies in each secondary feature correspond to one or more problems to be solved.

(3) Construct a teaching model framework

Use diagrams to illustrate the overall framework of the teaching model, and clarify the relationship between the first-level and second-level elements. Ensure that each secondary element has clear implementation steps and expected results.

2) Expert Delphi method for teaching model assessment

(1) Set up a team of experts

Seventeen experts were invited to participate in the review to ensure that they meet the requirements of professional background and industry experience. The 17 experts must meet two conditions. First, the requirements of professional background: the expert should have an academic background in accounting or related financial majors, usually with a master's or doctoral degree. Second, the requirements of industry experience: have rich experience in accounting teaching or practice, have been teaching accounting courses in vocational and technical colleges or higher education institutions for more than 5 years, and understand the current situation and needs of accounting education.

(2) The first round of expert assessment

Firstly, according to the framework of the teaching model, a detailed evaluation questionnaire was designed, including the evaluation of the first and second level elements. The experts were then given a review questionnaire with a description of the scoring criteria and the background of the study. Finally, collect the experts' ratings and revisions.

(3) Data analysis and model adjustment

First, a statistical analysis of the experts' scores was performed, and the coefficient of variation (CV) and coordination coefficient (W) for each element were calculated. Secondly, organize and categorize the open opinions of experts and extract key recommendations. Finally, according to the scoring results and expert opinions, the teaching model was adjusted.

(4) The second round of expert assessment

A second round of questionnaires was issued, and updated evaluation questionnaires were sent to experts to solicit their opinions again. Then, collect a second round of feedback and repeat the above analysis and adjustment process.

(5) The third round of expert assessment

If the expert opinions are still not fully aligned after the first two rounds of evaluation, or if further confirmation is needed for certain key elements, a third round of evaluation can be added. First, adjust the teaching model based on the feedback from the second round and update the review questionnaire, focusing on areas where expert opinions diverge the most, while simplifying the questionnaire content to concentrate on confirming a few critical elements. Next, distribute the updated questionnaire to the experts, along with detailed modification notes and the results of the first two rounds, to ensure the experts are informed of the evaluation progress. After collecting the experts' scores and comments, calculate the coefficient of variation (CV) and the concordance coefficient (W) to assess the consistency of expert opinions, while organizing open-ended feedback and extracting key recommendations. Based on the results of the third round of evaluation, make final adjustments to the teaching model to ensure it aligns with the consensus of the

majority of experts. When the expert opinions converge and the metrics reach an acceptable range, finalize the teaching model and summarize the three-round evaluation process, compiling a detailed evaluation report.

3) Apply the model

Design curriculum based on the model: According to the finalized teaching model, a detailed curriculum implementation plan was designed for Yunnan X Vocational College, and a detailed curriculum implementation plan was designed, including ten class hours.

2. Population / Sample Group

17 experts were invited via the Delphi method to review the designed teaching model.

First Round of Consultation: Experts were briefed on the research background, content and objectives, and an electronic evaluation questionnaire was distributed to them.

Second Round of Review: The first-round questionnaires were collected, the data were summarized and analyzed, the evaluation index system was improved based on experts' opinions, and a second questionnaire was formulated and distributed.

Third Round of Review: The second-round questionnaires were collected, and the data were summarized and analyzed again.

3. Research Instruments

The Delphi method was adopted, with an expert evaluation questionnaire designed using a 5-point Likert scale (1 = Very Unimportant to 5 = Very Important). Through multiple rounds of distribution, evaluation opinions on primary and secondary elements were collected, and statistical software was used for data analysis

4. Data Collection

Expert evaluation data collection: collect the evaluation data of experts on the teaching model through multiple rounds of feedback by Delphi method, and

quantitatively analyze the degree of consensus of experts on the elements of the model.

5. Data Analysis

Delphi method data analysis: quantitative statistics on the expert evaluation data to ensure the scientificity and consensus of the teaching model elements. By calculating the Coefficient of Variation (CV) and the Coefficient of Concordance (W), we can determine whether there is a big difference in the evaluation of the indicators by the experts, so as to assess the reliability of the scoring results of the experts in the round.

1) Coefficient of Variation (CV) is a statistical measure of the degree of dispersion of data, which represents the ratio of standard deviation to mean, which is calculated as follows:

$$CV = \frac{\sigma}{\mu} \quad (3.4)$$

σ is the standard deviation of the data, indicating the average deviation of the data points from the mean.

μ is the mean of the data, representing the average value of all data points.

The coefficient of variation is usually expressed as a percentage and is used to assess the relative variability of a data point with respect to the mean. The greater the coefficient of variation, the more dispersed the data is, and conversely, it indicates that the data points are more closely distributed around the mean. In the Delphi method of data analysis, the coefficient of variation is used to determine the consistency of the experts' evaluations of the indicators; if the coefficient of variation is small, it indicates that the experts are more in agreement with each other, and conversely, it indicates that there is a large divergence of opinion. It is usually considered that the coefficient of variation should be less than 0.25, which indicates that the experts' opinions are more harmonized.

In this study, when screening the indicators, those with a mean value of more than 3 and a coefficient of variation of less than 0.25 were retained, while other indicators were excluded. This criterion was applied to the statistical analysis of each round of questionnaires. If the experts' opinions are still not unanimous after the first round of questionnaires, the data will be optimized and processed to form the second round of questionnaires until the experts' opinions are united and the evaluation indicators are finalized.

2) This study calculates Kendall's Harmony Coefficient (Kendall's W) by statistical software to express the coordination coefficient W. The calculation formula for Kendall's Coefficient of Concordance (Kendall's W) is as follows:

$$W = \frac{12s}{m^2(N^2 - N)} \quad (3.5)$$

s is the sum of squared deviations of the rank sums.

m is the number of experts.

n is the number of items being ranked.

The value of W is between 0-1. The larger the value, the better the degree of coordination of the experts, and vice versa, the worse the degree of coordination. p-value corresponding to the value of W is less than 0.05, then it can be considered that the experts' scores on the indicator system have consistency.

Phase 3: To evaluate the modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province

1. Research steps

The third research phase is broadly divided into 4 steps, as shown in the figure below.

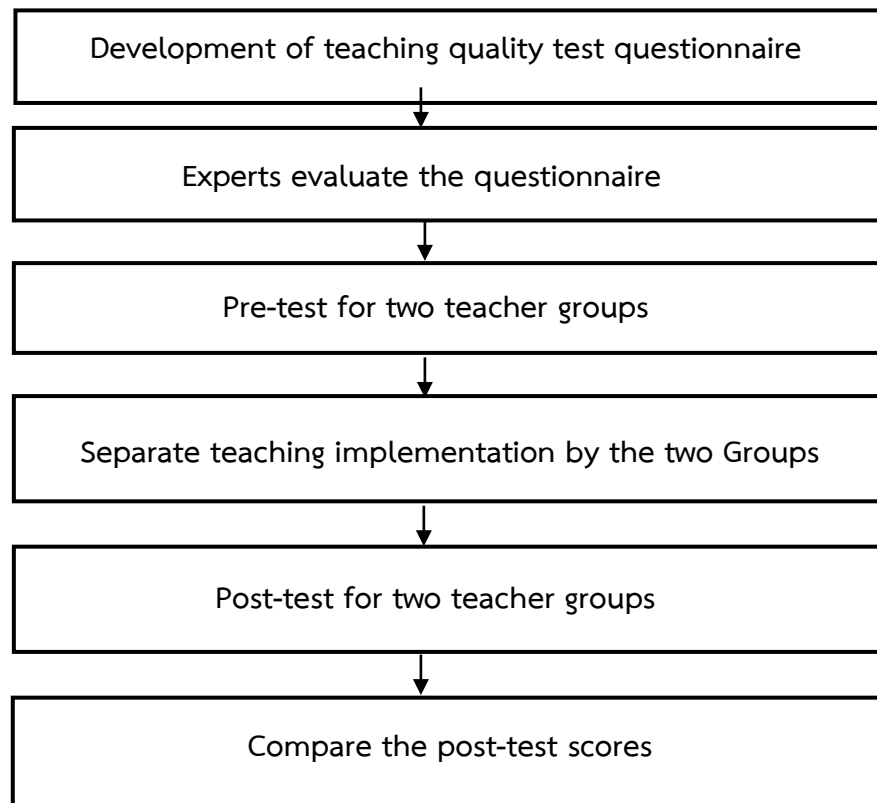


Figure 3.3 Framework diagram of phase 3

1) Development of Teaching Quality Test Questionnaire

A teaching quality test questionnaire was designed around the modern teaching model and actual teaching situations to assess the practical teaching effectiveness. This questionnaire adopted a universal 5-point Likert scale, consisting of 20 items across 6 dimensions, with a total score of 100 points.

2) Expert Evaluation of the Questionnaire

Five experts in the field were invited to review the questionnaire content using the Item Objective Congruence (IOC) method to ensure the scientific validity and reliability of the questionnaire. These five experts were required to meet the following two criteria:

(1) Academic Background Requirement: Experts should have an academic background in accounting or related financial disciplines, and typically hold a master's or doctoral degree.

(2) Industry Experience Requirement: Experts should possess extensive experience in accounting teaching or practice, with no less than 5 years of experience teaching accounting courses in vocational and technical colleges or higher education institutions, and have a good understanding of the current status and demands of accounting education.

3) Pre-test for Two Teacher Groups

The participants included 15 teachers in the experimental group and 15 teachers in the control group, all of whom were accounting teachers from Yunnan X Vocational and Technical College. One week prior to the experiment, both groups filled out the teaching quality test questionnaire simultaneously; the questionnaires were then collected uniformly and the scores were calculated. The purposes of this pre-test were as follows:

(1) Verify the Fairness of Grouping: The pre-test data on the initial teaching competence of teachers in the experimental and control groups were obtained. An independent-samples t-test was conducted to confirm that there were no significant differences in teaching competence between the two groups on the basis of matched teaching experience and professional titles. This ensured that the grouping complied with the principle of randomization and excluded the interference of initial competence differences on subsequent experimental results.

(2) Establish Baseline Data: The baseline teaching competence of teachers in both groups before the experiment was recorded, providing a reference standard for comparing the effects of experimental intervention later. It facilitated the accurate measurement of the actual impact of the modern teaching method and traditional teaching research activities on teachers' teaching competence through the difference between pre-test and post-test data.

4) Separate Teaching Implementation for the Two Groups

The experimental group received a 5-week training program with a total of 10 class hours using the new teaching method (2 class hours per week, including flipped classroom design, accounting case development, application of information-based teaching tools, etc.). The control group carried out traditional teaching

research activities (2 class hours per week, mainly focusing on collective lesson preparation and teaching experience sharing).

5) Post-test for Two Teacher Groups

The participants were the aforementioned 15 teachers in the experimental group and 15 teachers in the control group. Upon completion of the teaching experiment using the new teaching method, both groups filled out the teaching quality test questionnaire simultaneously; the questionnaires were then collected uniformly and the scores were calculated.

6) Comparison of Post-test Scores

The comparison of post-test scores further verified the scientificity of the experimental design, eliminated the interference of irrelevant variables, ensured the credibility of the research conclusion that "the new teaching method is more conducive to improving the teaching competence of accounting teachers", and provided data support for the subsequent promotion of the teaching method.

(1) Measure the Within-group Intervention Effects: By comparing the pre-test and post-test data of the experimental group and conducting a paired-samples t-test, it was verified whether the 5-week training program using the new teaching method could significantly improve teachers' teaching competence. Meanwhile, the pre-test and post-test data of the control group and the results of the paired-samples t-test were compared to determine whether traditional teaching research activities were effective in improving teachers' teaching competence.

(2) Compare the Between-group Intervention Differences: An independent-samples t-test was used to compare the post-test scores of the two groups, combined with effect size analysis, to clarify the differences in the effects of the new teaching method and traditional teaching research activities on improving the teaching competence of accounting teachers, thus providing direct data support for verifying the superiority of the new teaching method.

2. Population / Sample Group

The Population: All full-time teachers engaged in accounting teaching at X Vocational and Technical College of Yunnan Province amount to 35.

The Sample Group: 30 teachers who teach accounting courses were randomly selected from Yunnan Province X Vocational and Technical College, and they were divided into two groups (experimental group and control group), with 15 teachers in each group.

3. Research Instruments

1) Teaching quality test questionnaire: Based on the teaching model, a special teaching quality test questionnaire was designed, covering teaching objectives, teaching content, teaching methods, teaching tools, teaching evaluation, etc. This questionnaire uses the common Likert scale, and the scoring criteria are: Strongly disagree (1 point), disagree (2 points), neutral (3 points), agree (4 points), strongly agree (5 points).

2) Expert evaluation: using the IOC method to assess the scientific validity of the teaching quality test questionnaire. In this study, to ensure the scientific and validity of the questionnaire, the index of content validity (IOC) method was used for assessment. Specifically, five experts in the field of accounting specialization were invited to score each question item of the questionnaire. The scoring scale is as follows: -1 indicates disagreement, 0 indicates neutrality, and 1 indicates agreement. Only if the IOC value of a question is 0.6 or more, the item will be retained in the questionnaire; otherwise, it will be excluded.

4. Data Collection

Data Collection of Teaching Quality Tests: Collect the pre-test and post-test teaching quality test questionnaires of 30 teachers from Yunnan X Vocational and Technical College.

5. Data Analysis

Statistical software was used to analyze the collected data, and the statistical analyses included:

1) Descriptive Statistics: Statistical software was employed to conduct descriptive statistical analysis on the data of the teaching quality test questionnaires, such as the mean.

2) Difference Analysis:

(1) Pre-test Difference Analysis: An independent samples t-test was performed on the pre-test data of the experimental group and the control group to determine whether there were significant differences in the teaching ability levels of the two groups of teachers before the experiment, so as to verify the randomness and fairness of the grouping.

(2) Intra-group Pre-test and Post-test Difference Analysis: Paired samples t-tests were respectively carried out on the pre-test and post-test data of the experimental group and the control group to compare the changes in teaching ability of each group of teachers before and after the experiment, and to judge the respective impacts of the new teaching method training and traditional teaching and research activities on teachers' teaching ability.

(3) Post-test Difference Analysis: An independent samples t-test was conducted on the post-test data of the experimental group and the control group to analyze whether there were significant differences in the teaching ability levels of the two groups of teachers after different intervention methods, so as to further judge the effectiveness of the new teaching method compared with the traditional teaching and research activities.

3. Effect Size Analysis: The Cohen's d effect size was calculated to further test the strength of the effect of the new teaching method on improving teachers' teaching ability from the perspective of practical significance, and to clarify the practical value of the experimental effect.

Chapter 4

Results of Analysis

This study adopted different research methods at different phases, and the data analysis methods corresponding to each phase also varied. The following is a detailed explanation of data analysis based on the three research phases.

Phase 1: To study the teaching status of accounting courses in vocational and technical colleges in Yunnan Province

In the research Phase 1, analysis results need to be presented after the completion of two steps, which are specified as follows:

1. Analysis results presented after completing the "Expert Evaluation of the Questionnaire" step

A total of 5 experts were invited to evaluate the questionnaire. The Item Objective Congruence (IOC) was used as the evaluation criterion during the assessment process. All experts scored independently in accordance with the evaluation form in Appendix C2, with a three-point scoring rule: 1 for high relevance, 0 for moderate relevance, and -1 for irrelevance. The evaluation results and calculated IOC values of each item are detailed in Appendix D1.

In this research, questionnaire items with an IOC value of 0.6 or higher were retained. The results show that the IOC score of all items in the questionnaire exceeds 0.6, ranging from 0.6 to 1.0. No invalid items were removed in this round. It proves that each item of the questionnaire matches the research theme and measurement objectives well, and the questionnaire has good content validity for follow-up investigation.

2. Analysis results presented after completing the "Analyze the data of the questionnaire" step

This survey was conducted among teachers of accounting majors in 8 vocational and technical colleges in Yunnan Province.

2.1 Basic Information

Table 4.1 Basic Information

	Type	Number of Teachers	Percentage
Gender	Male	142	51.1%
	Female	136	48.9%
Title	No Title	21	7.5%
	Teaching Assistant	72	25.9%
	Lecturer	115	41.4%
	Associate Professor	58	20.9%
	Professor	33	11.9%
Years of teaching experience	3 years or less	56	20.1%
	4-10 years	124	44.6%
	11-20 years	71	25.5%
	More than 20 years	27	9.7%

A total of 300 questionnaires were distributed, and 278 valid questionnaires were collected, with an effective recovery rate of 92.7%. The sample covers 72 teaching assistants (25.9%), 115 lecturers (41.4%), 58 associate professors (20.9%), and 33 professors (11.9%). In terms of teaching experience, there are 56 teachers with 3 years or less (20.1%), 124 teachers with 4-10 years (44.6%), 71 teachers with 11-20 years (25.5%), and 27 teachers with more than 20 years (9.7%). The sample structure is in line with the characteristics of the teacher group in vocational colleges, and the data is highly representative.

Validity Analysis of the Questionnaire

To ensure the scientific rigor and validity of the survey data and to lay the foundation for subsequent statistical analyses such as factor analysis and correlation analysis, this study conducted validity tests on the core items of the questionnaire, with particular emphasis on the KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy and Bartlett's test of sphericity, to examine whether the data were suitable for factor analysis and further statistical procedures.

The questionnaire employed in this survey comprised 36 Likert-scale items across six core dimensions. To determine whether these 36 items were appropriate for factor analysis, the KMO test and Bartlett's test of sphericity were performed. The results indicated that the KMO measure of sampling adequacy was 0.76. According to the established criteria for KMO interpretation, this value exceeded 0.7, suggesting a substantial number of common factors among the items and demonstrating adequate sampling suitability, thereby satisfying the prerequisites for factor analysis. Additionally, Bartlett's test of sphericity yielded an approximate chi-square value of 692.58, with 630 degrees of freedom (df) and a significance level (Sig.) of 0.000 ($p < 0.001$). This result indicated the presence of significant correlations among the scale items, leading to the rejection of the null hypothesis of Bartlett's test of sphericity. Consequently, the data demonstrated a sound foundation for structural validity and were deemed suitable for factor analysis and subsequent statistical analyses.

2.2 Existing problems

After conducting a literature analysis, this study systematically sorted out the problems existing in the teaching of accounting courses in higher vocational colleges across six core dimensions, with the details as follows.

2.2.1 Teaching Objectives

The teaching objectives are vague and disconnected from needs, mainly presenting three core problems:

Existing Problem 1: Vague objective orientation, failing to anchor vocational needs

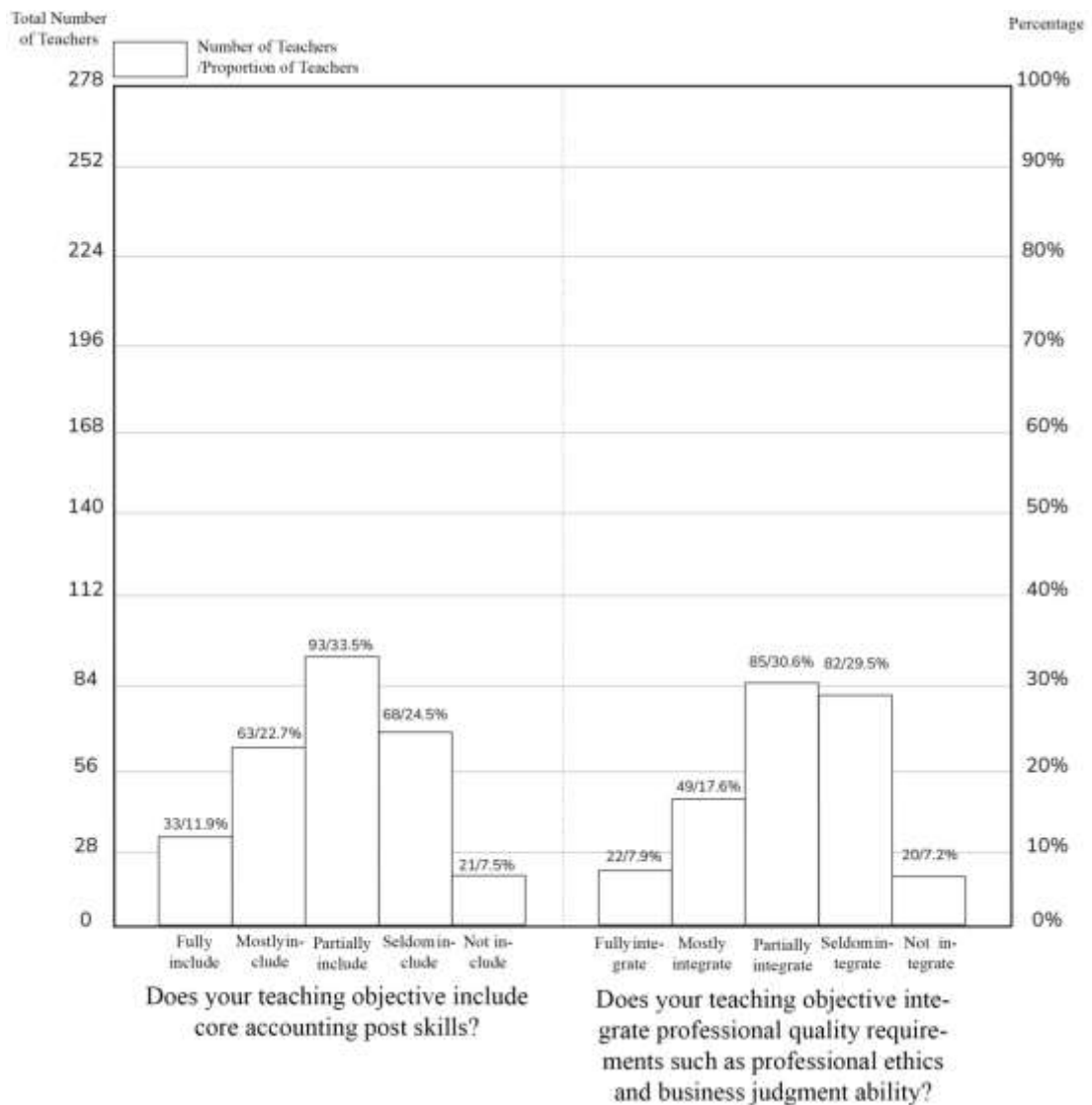


Figure 4.1 Existing Problem 1

Only 11.9% of teachers reported that their teaching objectives "fully include" core accounting post skills, and 22.7% "mostly include" them, accounting for less than 35% in total. The integration of professional quality is even weaker: only 7.9% "fully integrate" professional ethics and business judgment ability, 29.5% "seldom integrate" them, and 7.2% "do not integrate" them. Nearly 40% of teaching objectives neglect professional quality, showing a significant deviation from the orientation of "cultivating vocational accounting talents".

Existing Problem 2: Disconnection from qualification examinations and post requirements

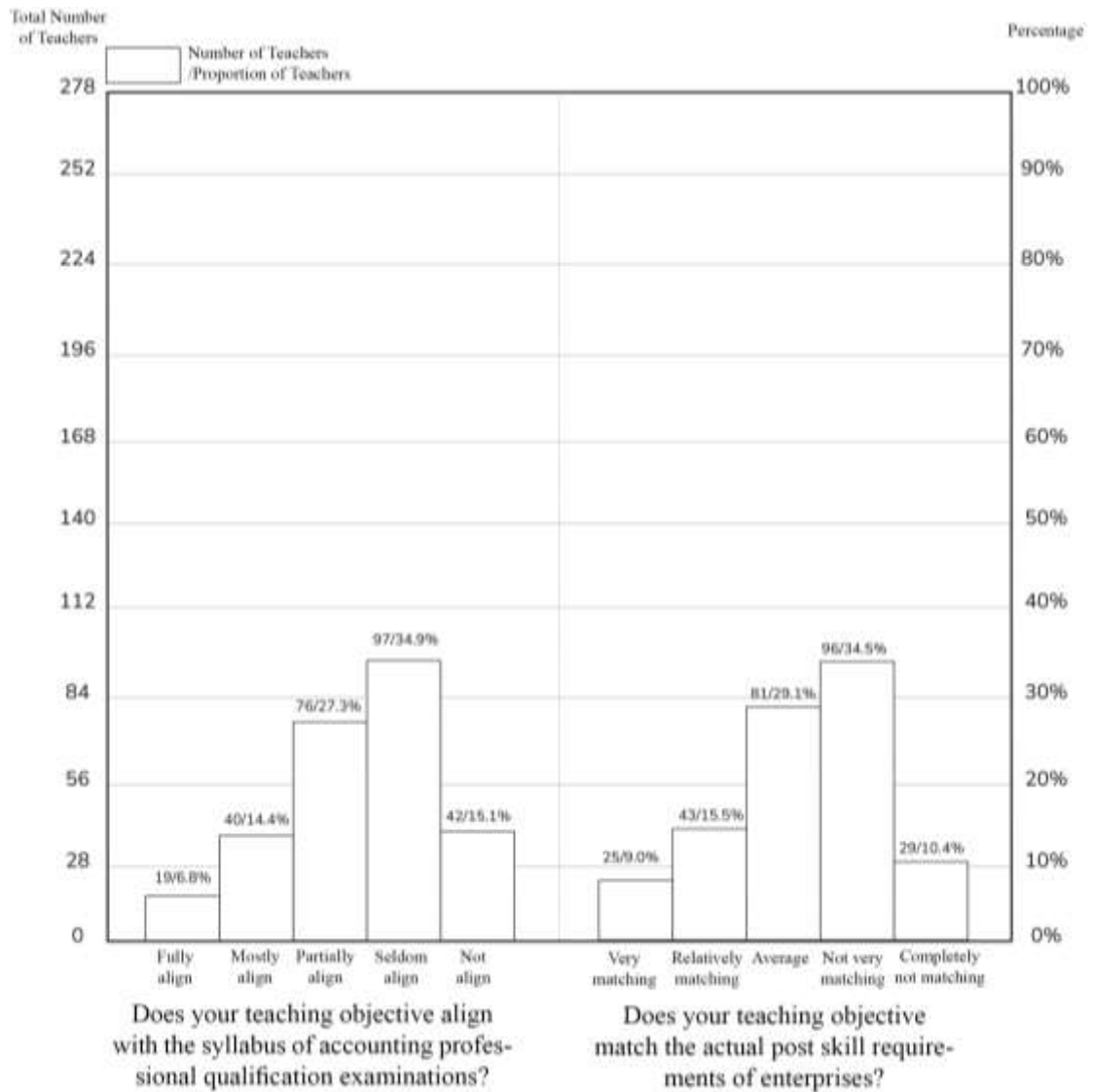


Figure 4.2 Existing Problem 2

In terms of aligning with the syllabus of accounting professional qualification examinations, only 6.8% "fully align" and 14.4% "mostly align", while 34.9% "seldom align" and 15.1% "do not align". Half of the teaching objectives are disconnected from qualification examinations, leading to a separation between students' "in-class learning" and "exam preparation". In terms of matching the actual post skill requirements of enterprises, only 9.0% "very match" and 15.5% "relatively

match", while 34.5% "are not very matching" and 10.4% "are completely not matching". More than 40% of teaching objectives fail to meet the actual needs of enterprises.

Existing Problem 3: Single-dimensional objectives, neglecting comprehensive literacy

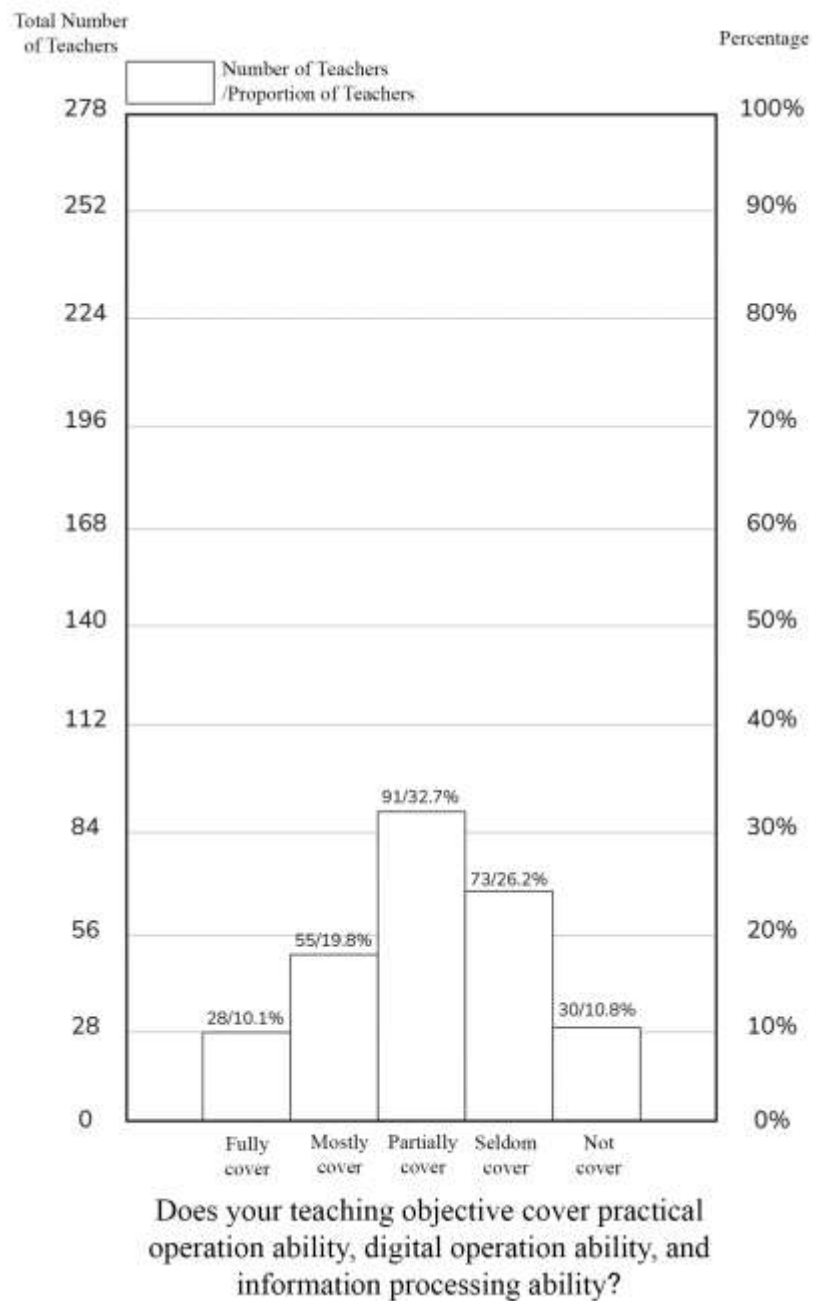


Figure 4.3 Existing Problem 3

Only 10.1% of teaching objectives "fully cover" practical operation ability, digital operation ability, and information processing ability, and 19.8% "mostly cover" them. In contrast, 26.2% "seldom cover" these abilities and 10.8% "do not cover" them. Most objectives focus on theoretical knowledge, making it difficult to cultivate compound accounting talents required in the digital economy era.

2.2.2 Teaching Content

The teaching content is "repetitive, outdated, and disconnected from practice", failing to achieve the connection between "theory-practice-post", with problems such as chaotic structure and outdated updates. The main manifestations are as follows:

Existing Problem 4: Repetitive and overlapping course content, lacking logical system

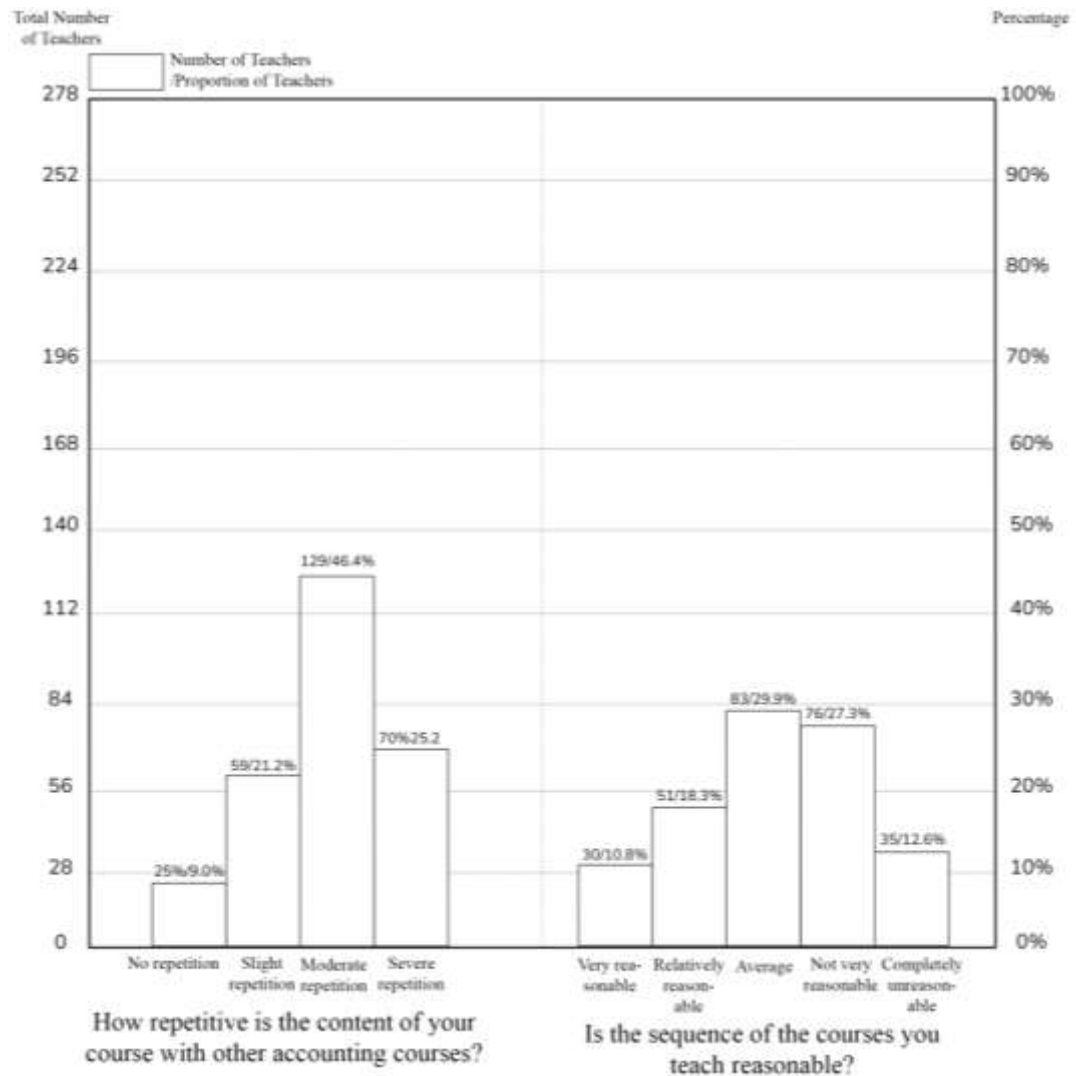


Figure 4.4 Existing Problem 4

Only 9.0% of courses have "no repetition", 21.2% have "slight repetition", while 46.4% have "moderate repetition" and 25.2% have "severe repetition". More than 70% of courses have moderate or severe content repetition, with particularly prominent repetition between Basic Accounting, Financial Accounting, and Cost Accounting. The sequence of courses is not reasonable enough: 10.8% are "very reasonable" and 18.3% are "relatively reasonable", while 27.3% are "not very reasonable" and 12.6% are "completely unreasonable". Some colleges

teach Management Accounting before Cost Accounting, resulting in fragmented knowledge.

Existing Problem 5: Outdated content, disconnected from industry development

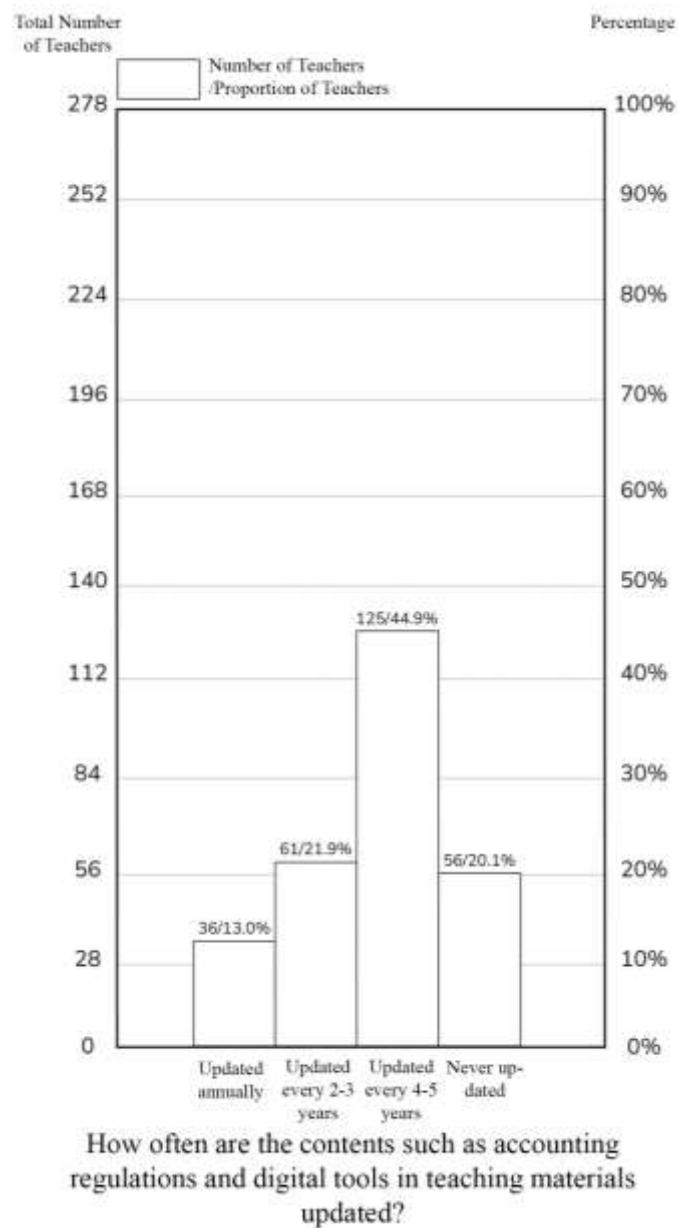


Figure 4.5 Existing Problem 5

Teaching materials are seriously outdated. Only 13.0% are "updated annually" in terms of accounting regulations and digital tools, 21.9% are "updated every 2-3 years", 44.9% are "updated every 4-5 years", and 20.1% are "never updated". More than 60% of teaching materials fail to keep up with the industry pace, lacking digital content such as financial robots and ERP systems, and still focus on traditional industrial enterprise accounting calculation.

Existing Problem 6: Insufficient integration with certificates and posts

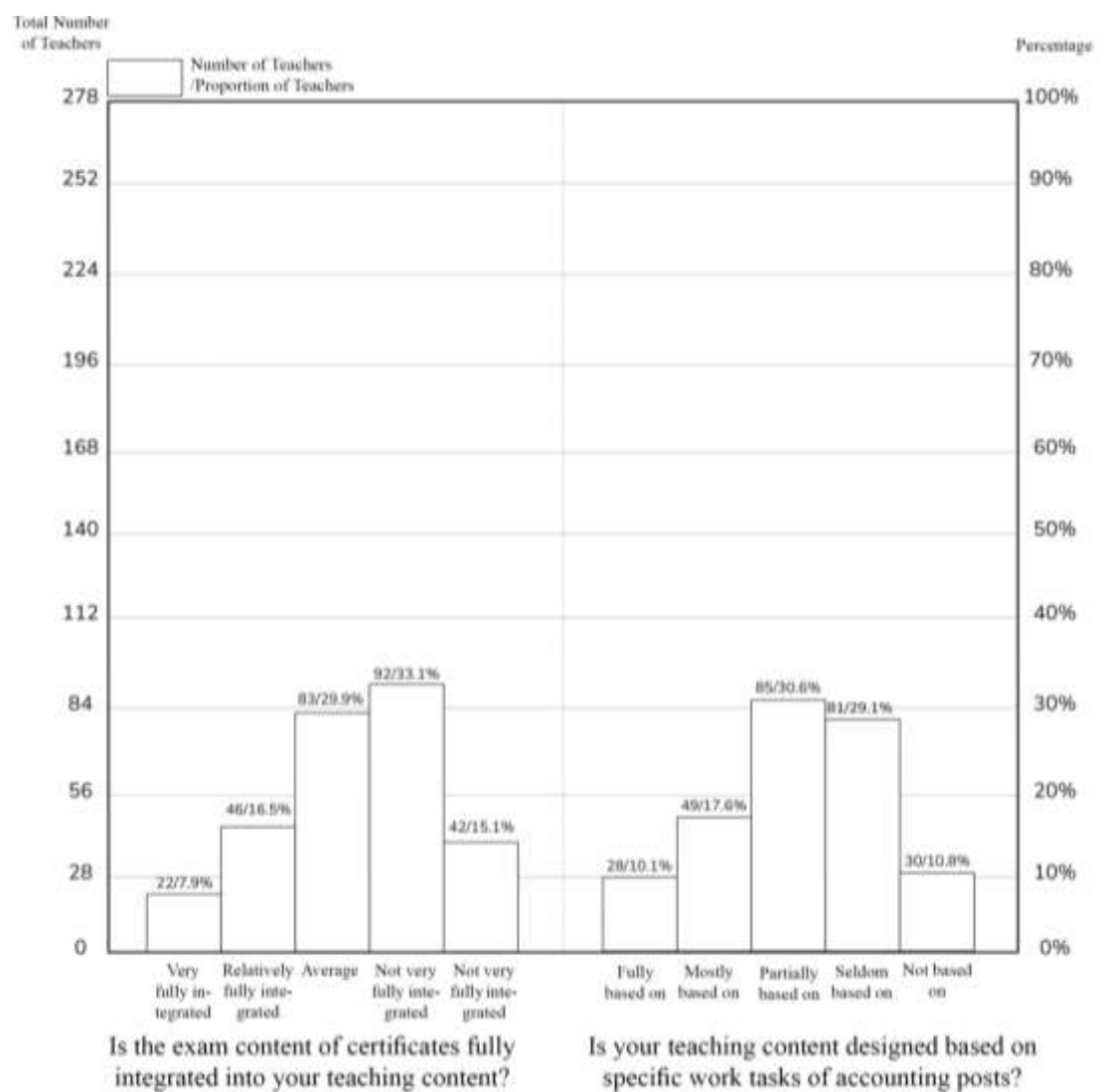


Figure 4.6 Existing Problem 6

In terms of integrating certificate exam content, only 7.9% are "very fully integrated" and 16.5% are "relatively fully integrated", while 33.1% are "not very fully integrated" and 11.9% are "very not fully integrated". In terms of design based on post tasks, 10.1% are "fully based on" and 17.6% are "mostly based on" post tasks, while 29.1% are "seldom based on" and 10.8% are "not based on" them. As a result, students "cannot apply what they have learned" and need to receive re-training from enterprises after taking up posts.

2.2.3 Teaching Methods

Teaching methods are traditionally single, with students' subjectivity ignored. The "teacher-centered lecture" is still dominant, lacking interactivity and practicality, which makes it difficult to stimulate students' participation.

Existing Problem 7: "Teacher-centered" approach, with students learning passively

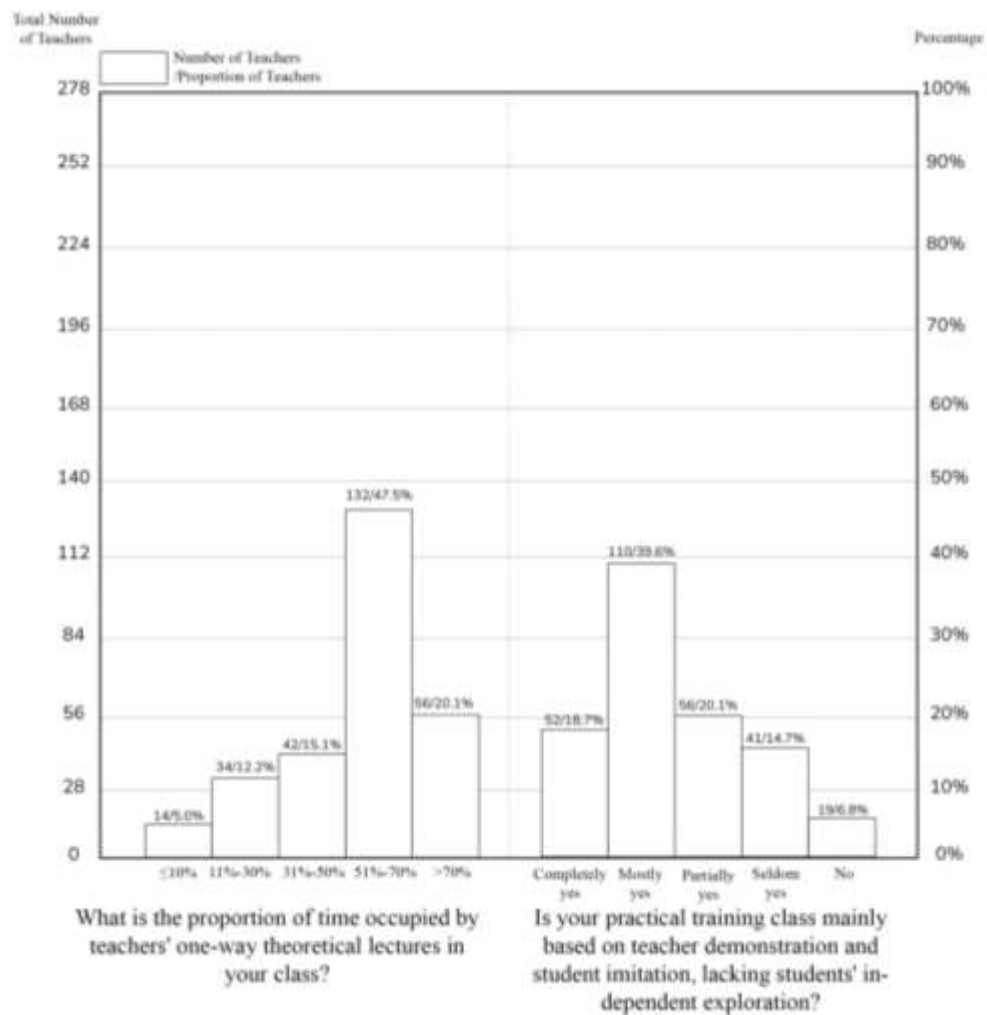


Figure 4.7 Existing Problem 7

68% of teachers reported that the proportion of one-way lectures in class exceeds 50% (47.5% for 51%-70% and 20.1% for over 70%), while only 17.2% have a proportion below 30%, leading to low student participation. Practical training classes also lack autonomy: 18.7% are "completely" based on teacher demonstration and student imitation, and 39.6% are "mostly" based on this mode. In total, 58.3% of practical training classes rely on passive imitation, making it difficult for students to improve their independent exploration and problem-solving abilities.

Existing Problem 8: Single teaching method, lacking contextualization and interactivity

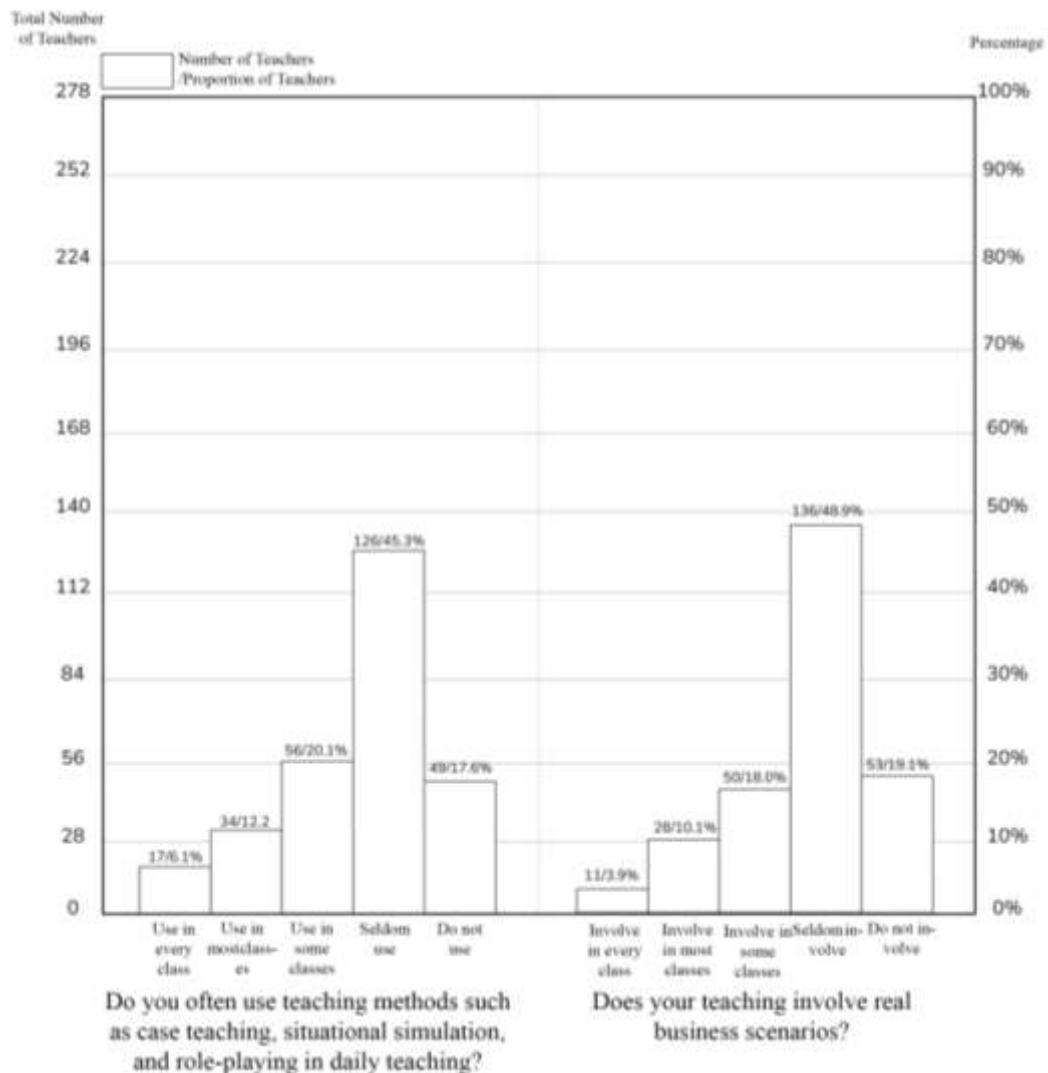


Figure 4.8 Existing Problem 8

Interactive teaching methods are rarely used. Only 6.1% of teachers "use case teaching, situational simulation, etc. in every class", 12.2% "use them in most classes", 45.3% "seldom use them", and 17.6% "do not use them". Real business scenarios are lacking: 3.9% of teachers "involve real scenarios in every class", 10.1% "involve them in most classes", 48.9% "seldom involve them", and 19.1% "do not involve them", making it difficult for students to understand the practical application scenarios of knowledge.

Existing Problem 9: Neglect of "integration of courses and competitions" and "school-enterprise collaboration"

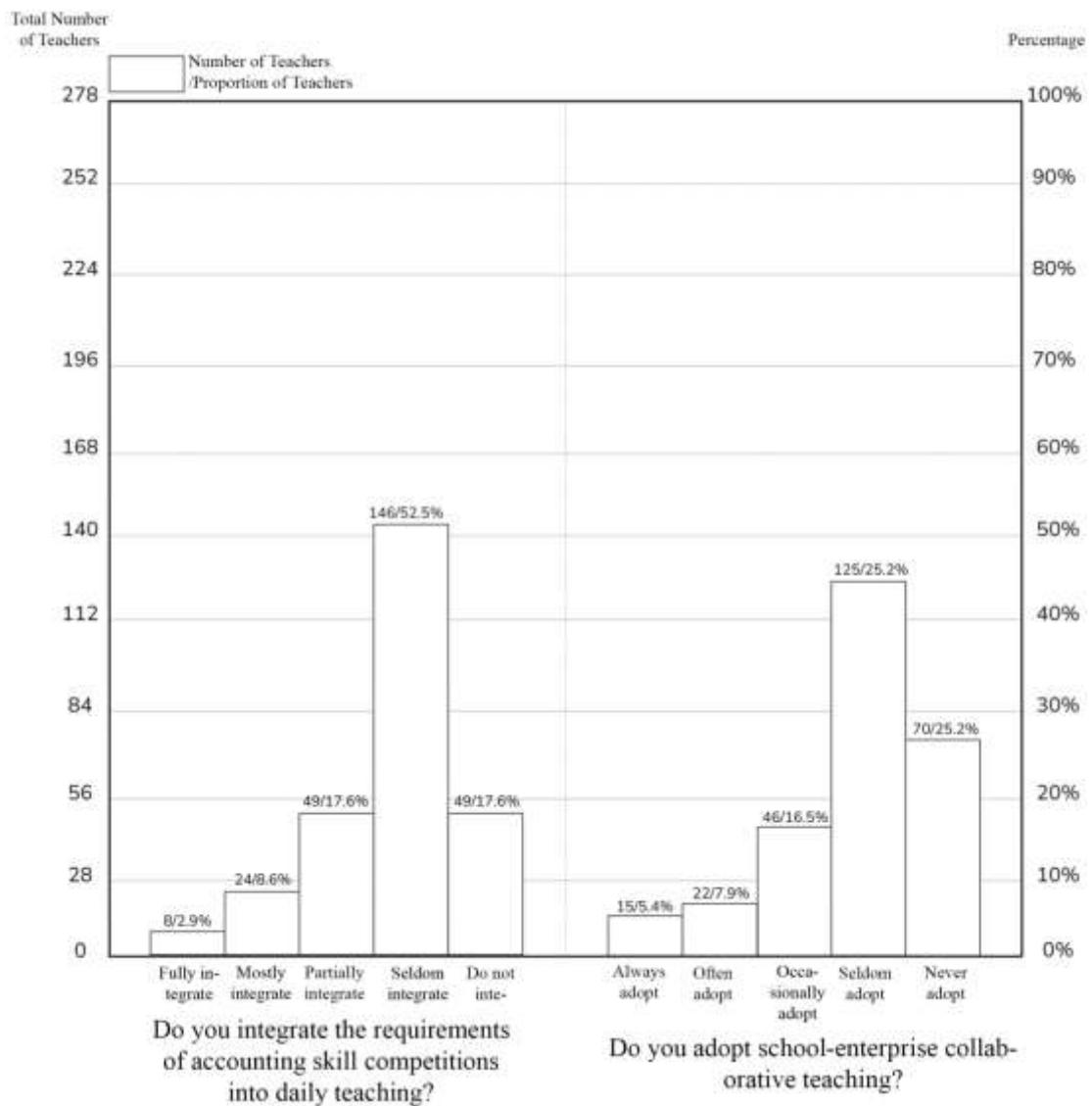


Figure 4.9 Existing Problem 9

The integration of courses and competitions is formalized. Only 2.9% of teachers "fully integrate" the requirements of accounting skill competitions, 8.6% "mostly integrate" them, 52.5% "seldom integrate" them, and 17.6% "do not integrate" them. School-enterprise collaboration is seriously insufficient: 5.4% of teachers "always adopt" school-enterprise collaborative teaching, 7.9% "often adopt"

it, 44.9% "seldom adopt" it, and 25.2% "never adopt" it. Real business and teacher resources from enterprises are not effectively introduced into teaching.

2.2.4 Teaching Tools

Modern information technology is not fully utilized in teaching tools, with problems such as "single tool type" and "superficial application". The specific conditions are as follows:

Existing Problem 10: Dominance of traditional tools, lack of information-based tools

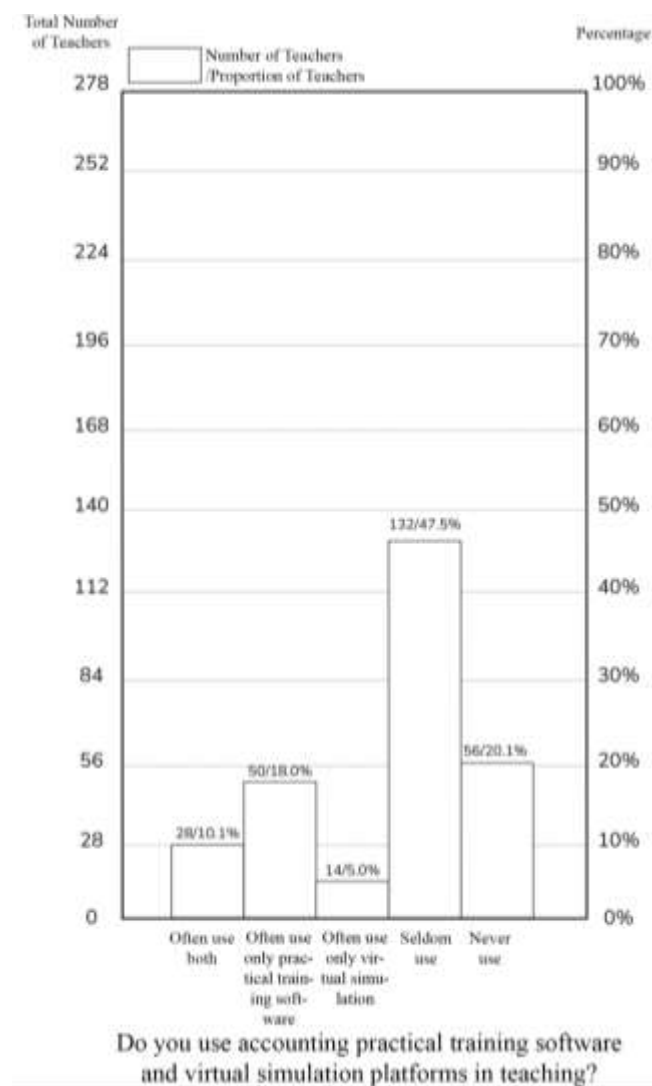


Figure 4.10 Existing Problem 10

Only 10.1% of teachers "often use both" accounting practical training software (such as UFIDA and Kingdee) and virtual simulation platforms, 18.0% "often use only practical training software", 5.0% "often use only virtual simulation", 47.5% "seldom use" them, and 20.1% "never use" them. More than 60% of teaching relies on "blackboard + textbook", with insufficient coverage of digital tools.

Existing Problem 11: Superficial application of information-based tools

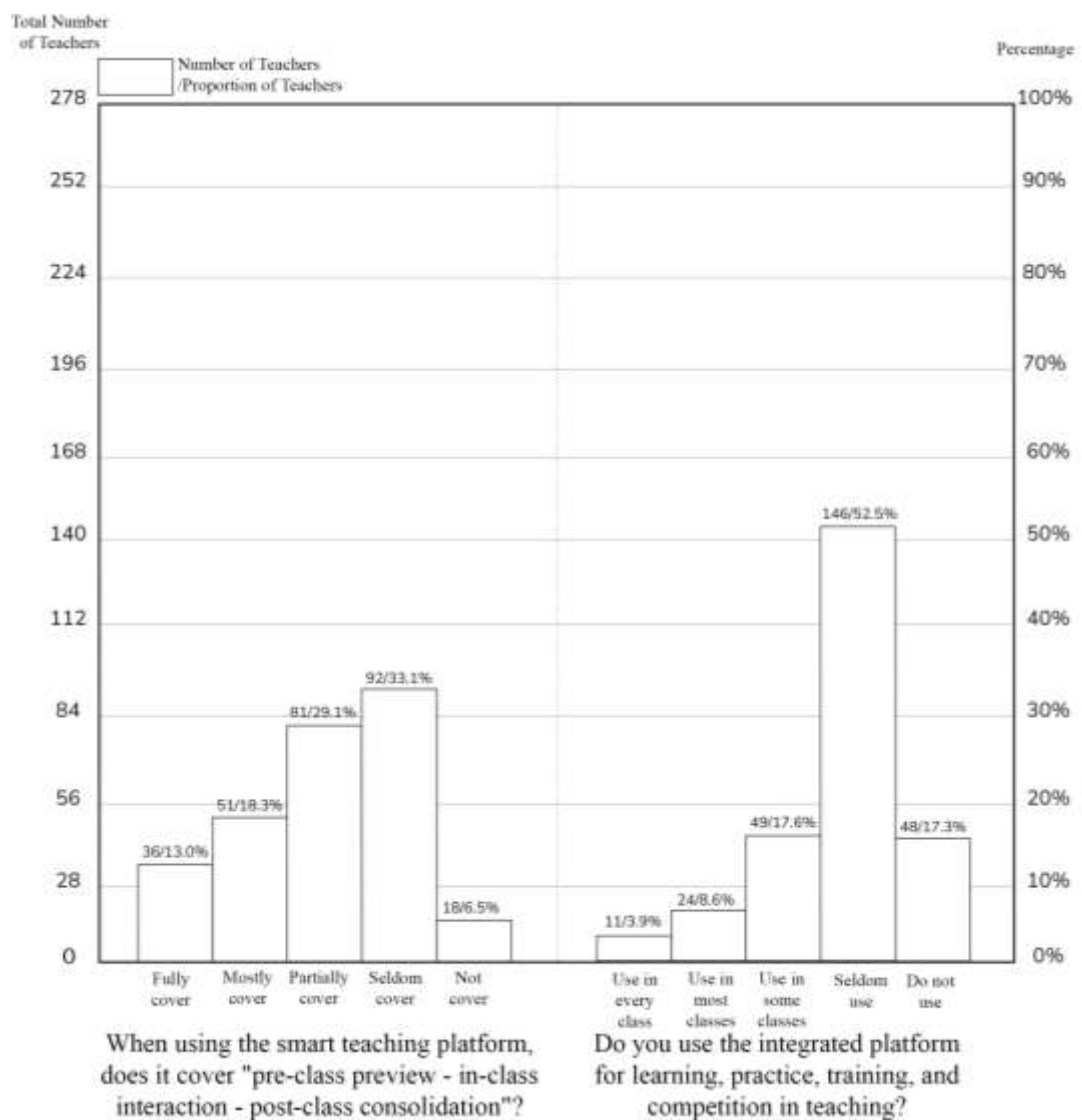


Figure 4.11 Existing Problem 11

Smart teaching platforms (such as Rain Classroom and Chaoxing Learning Pass) fail to play their full role in the entire process. Only 13.0% "fully cover" pre-class preview, in-class interaction, and post-class consolidation, 18.3% "mostly cover" them, 33.1% "seldom cover" them, and 6.5% "do not cover" them. These platforms are mostly limited to functions such as roll call and homework assignment. The integrated platform for learning, practice, training, and competition (such as the TTC platform) is lacking: only 3.9% of teachers "use it in every class", 8.6% "use it in most classes", 52.5% "seldom use it", and 17.3% "do not use it", resulting in a lack of professional platform support for students' practical training.

Existing Problem 12: Disconnection between tools and teaching content, lack of pertinence

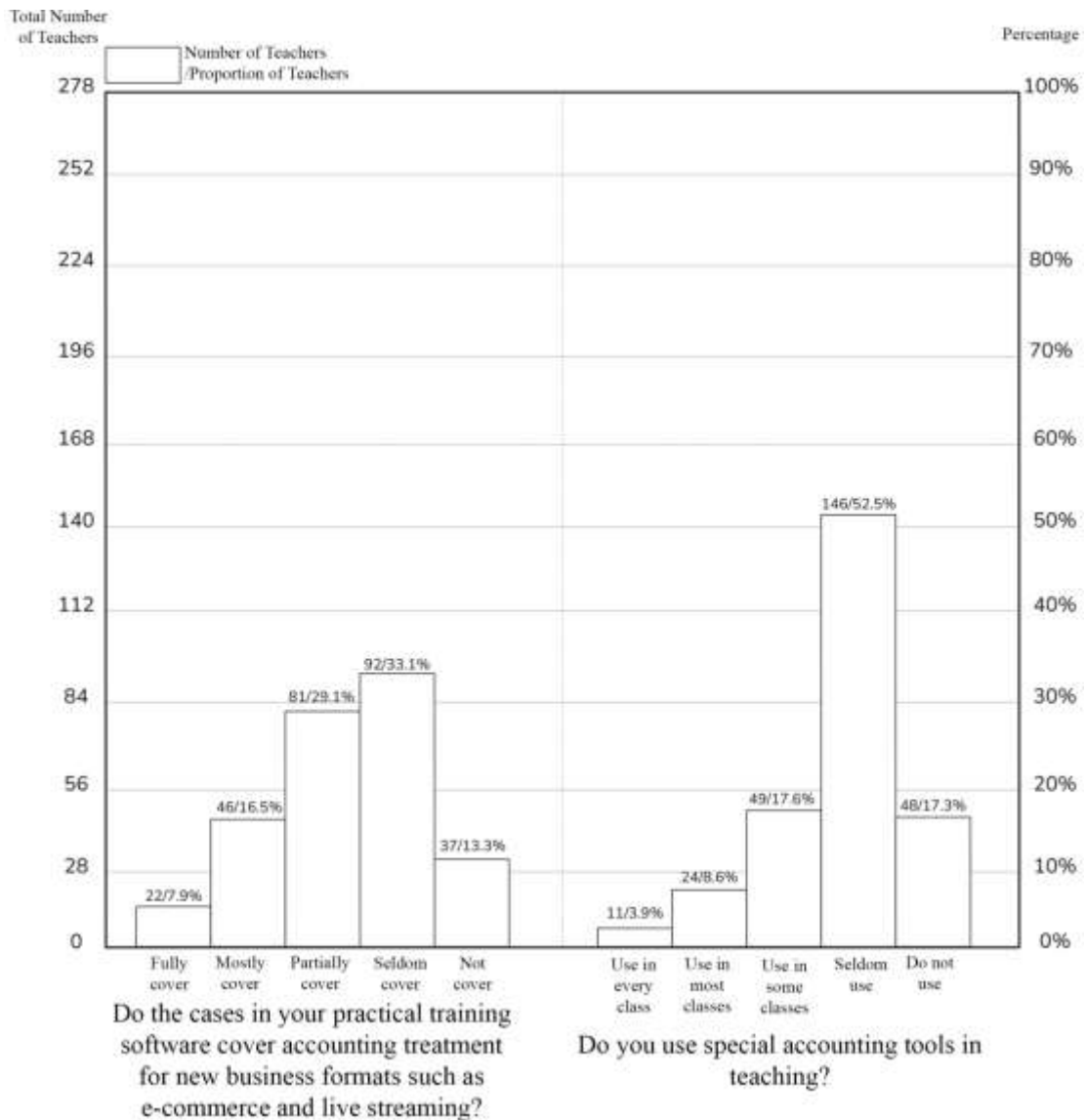


Figure 4.12 Existing Problem 12

The cases in practical training software are outdated. Only 7.9% "fully cover" accounting treatment for new business formats such as e-commerce and live streaming, 16.5% "mostly cover" them, 33.1% "seldom cover" them, and 13.3% "do not cover" them. Special accounting tools (such as budget management systems and cost analysis modules) are rarely used: 3.9% of teachers "use them in every class", 8.6% "use them in most classes", 52.5% "seldom use them", and 17.3% "do not use them". As a result, the tools cannot support the implementation of core teaching content.

2.2.5 Teaching Process

There is a disconnect between "theory and practice" in the teaching process, and the implementation links are fragmented. The teaching process fails to form a closed loop of "pre-class - in-class - post-class", and "theoretical teaching" is separated from "practical teaching".

Existing Problem 13: Disconnection between theory and practice, weak practical training links

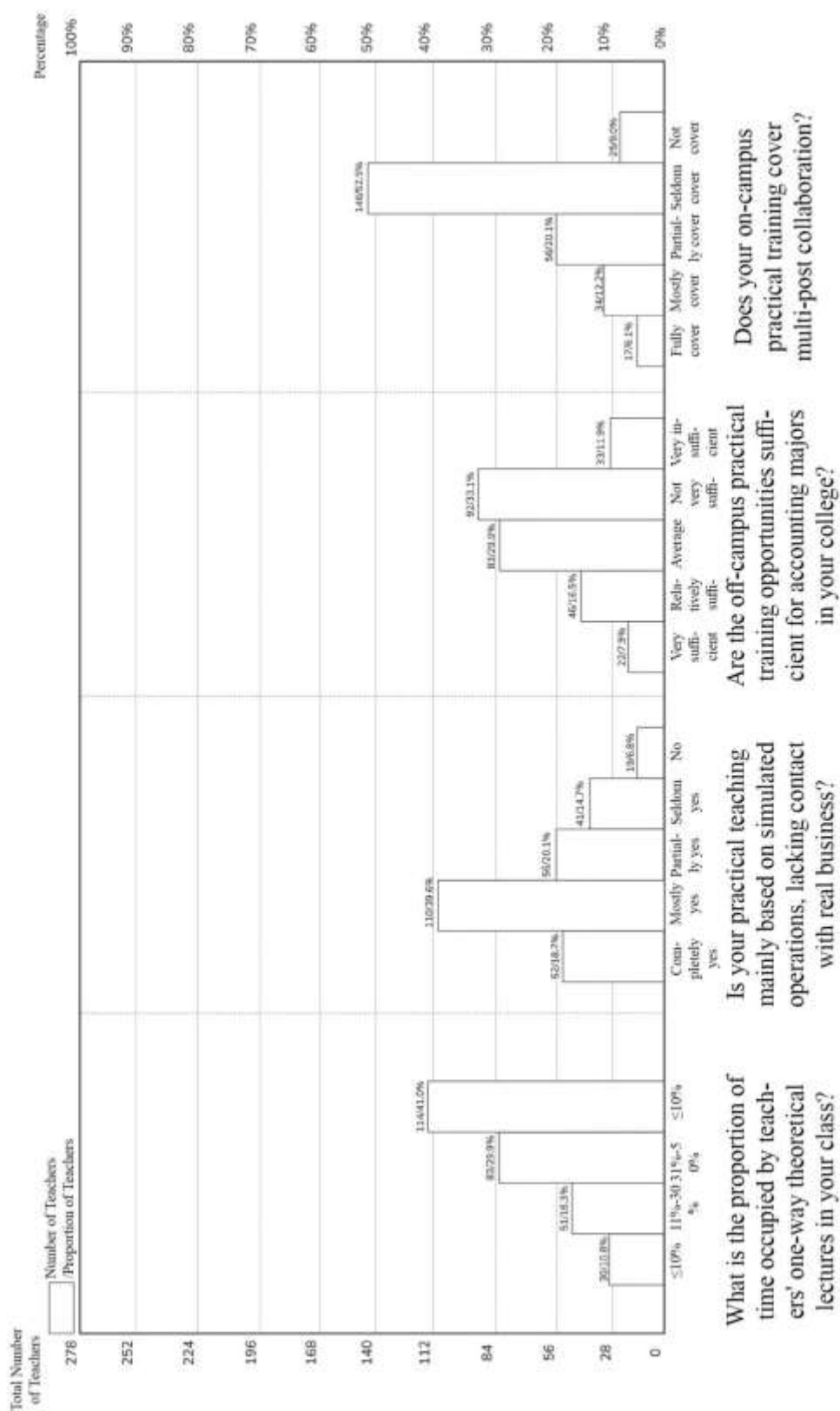


Figure 4.13 Existing Problem 13

The proportion of practical teaching hours is extremely low. 41.0% of courses have practical hours $\leq 10\%$, and only 10.8% have practical hours $> 50\%$. Practical training content is virtualized: 62.6% of practical teaching is "completely" or "mostly" based on simulated operations (such as filling in vouchers and preparing statements), lacking contact with real business. Off-campus practical training opportunities are insufficient: 71.2% of colleges have "not very sufficient" or "very insufficient" opportunities, and only 24.4% have "very sufficient" or "relatively sufficient" opportunities. On-campus practical training has poor collaboration: only 6.1% "fully cover" multi-post collaboration between cashiers, accountants, and supervisors, 52.5% "seldom cover" it, and 9.0% "do not cover" it, making it difficult for students to form an overall understanding of posts.

Existing Problem 14: Fragmented teaching process, lack of systematic design

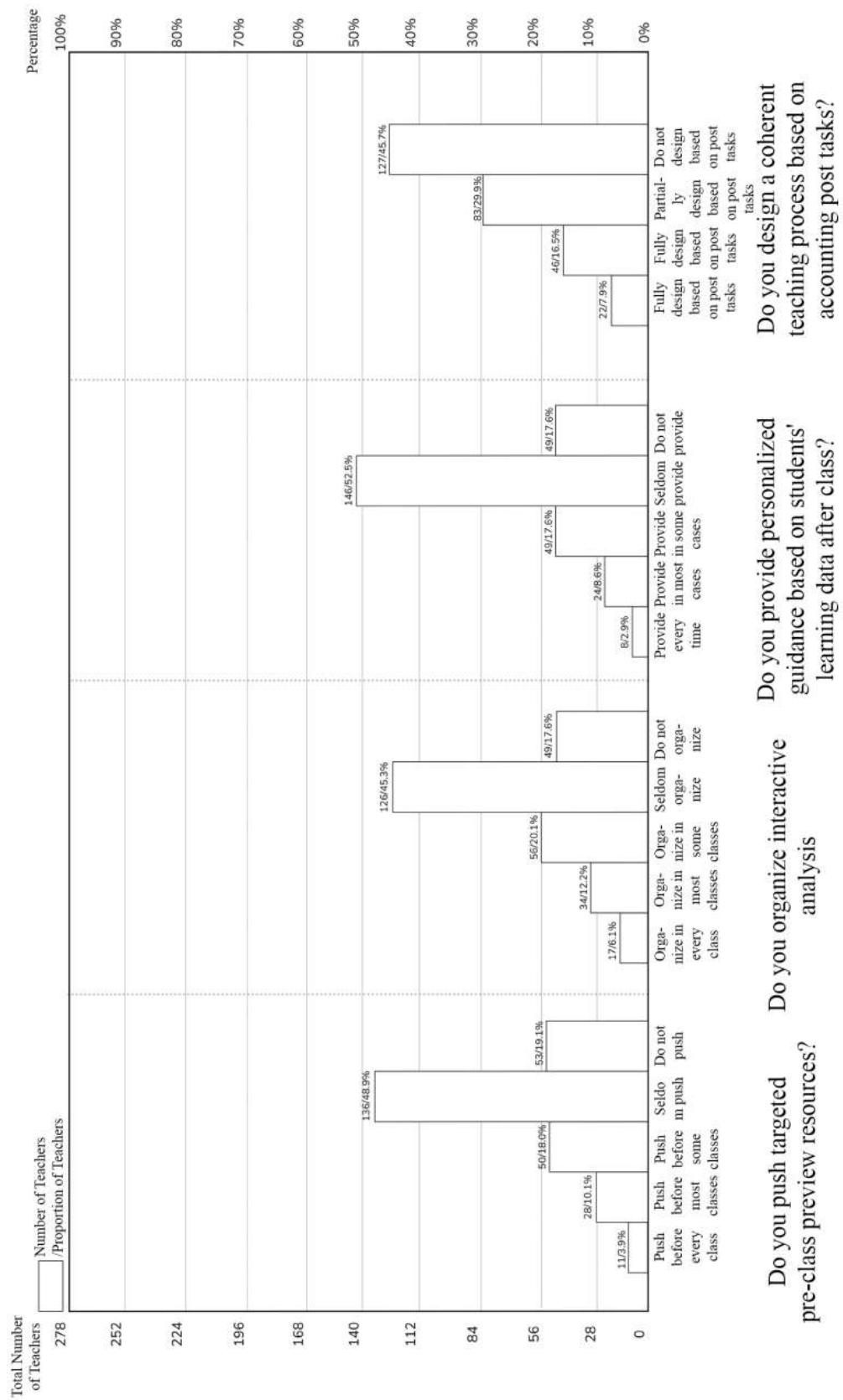


Figure 4.14 Existing Problem 14

Guidance for pre-class preview is insufficient. 3.9% of teachers "push preview resources before every class", 10.1% "push them before most classes", 48.9% "seldom push them", and 19.1% "do not push them". The analysis of key and difficult points in class is absent: 6.1% of teachers "organize interactive discussions in every class", 12.2% "organize them in most classes", 45.3% "seldom organize them", and 17.6% "do not organize them". Personalized guidance after class is lacking: 2.9% of teachers "provide it every time", 8.6% "provide it in most cases", 52.5% "seldom provide it", and 17.6% "do not provide it". The teaching process is disconnected from posts: 45.7% of teachers do not design a coherent process based on accounting post tasks, resulting in serious knowledge fragmentation.

Existing Problem 15: Insufficient practical ability of teachers, inefficient process guidance

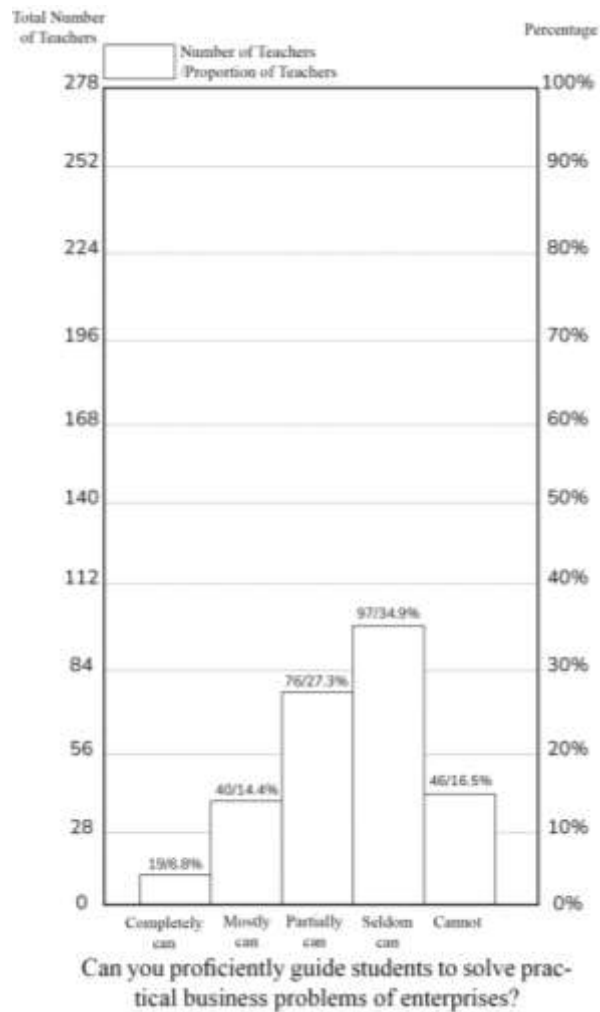


Figure 4.15 Existing Problem 15

Only 6.8% of teachers "can completely" guide students to solve practical business problems of enterprises (such as tax planning and internal control), 14.4% "can mostly" do so, 34.9% "seldom can" do so, and 16.5% "cannot" do so. Young teachers have insufficient understanding of the practical application of management accounting tools (such as the balanced scorecard and activity-based costing), leading to "more theoretical lectures and less practical teaching" in the teaching process and poor practical training guidance effects.

2.2.6 Teaching Evaluation

Teaching evaluation methods are single, with an emphasis on results over processes. It fails to cover the full dimensions of "knowledge-skills-literacy" and ignores the learning process, making it unable to objectively reflect students' abilities. The main aspects are as follows:

Existing Problem 16: Single evaluation method, focusing on "summative examinations"

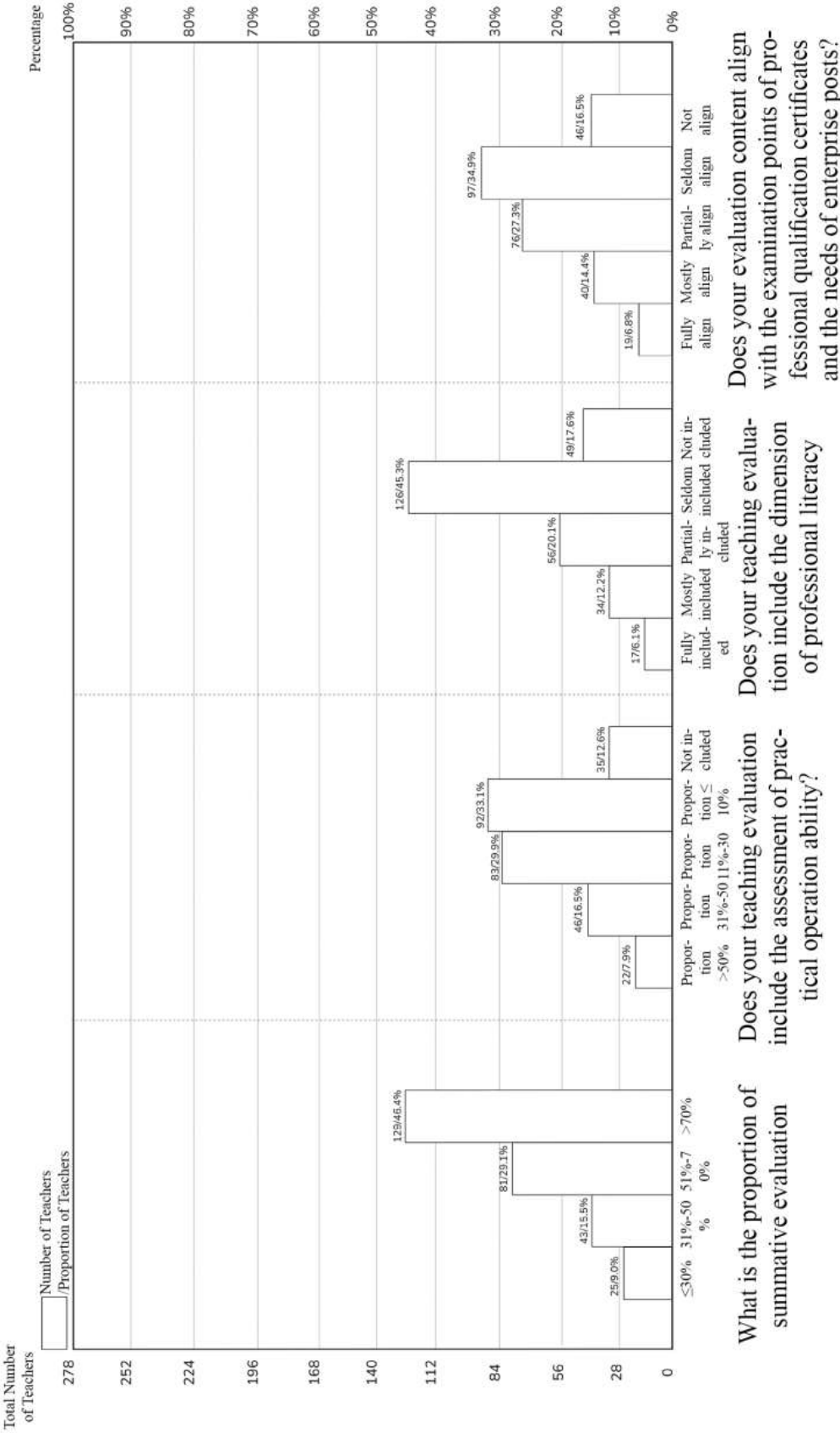


Figure 4.16 Existing Problem 16

46.4% of courses have summative evaluation (final examination) accounting for over 70% of the total score, 29.1% have it accounting for 51%-70%, and only 9.0% have it accounting for $\leq 30\%$. The assessment of practical operation ability is absent: 7.9% have it accounting for over 50%, 16.5% have it accounting for 31%-50%, 33.1% have it accounting for $\leq 10\%$, and 12.6% do not include it. The evaluation of professional literacy is missing: 6.1% "fully include" it, 12.2% "mostly include" it, 45.3% "seldom include" it, and 17.6% "do not include" it. The evaluation only focuses on the memory of theoretical knowledge.

Existing Problem 17: Neglect of process evaluation, lack of dynamic feedback

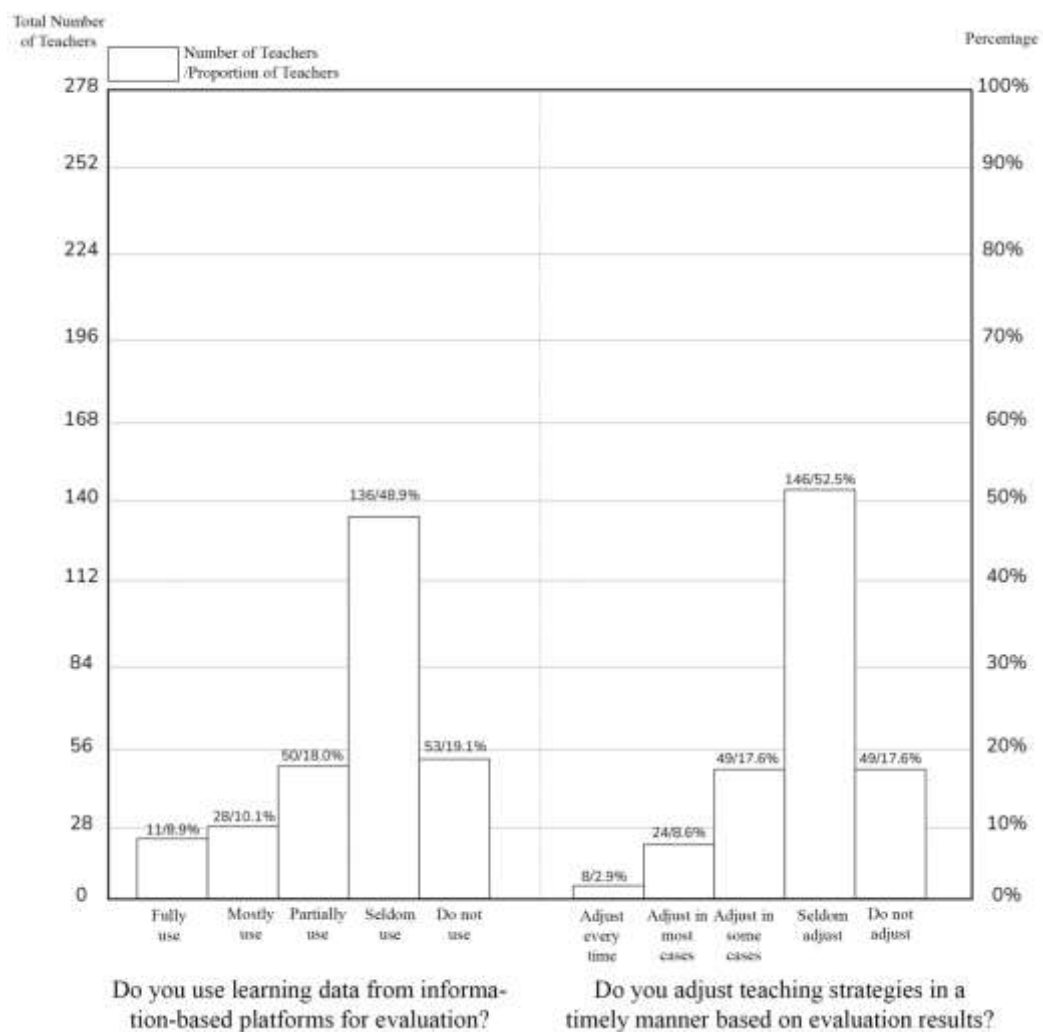


Figure 4.17 Existing Problem 17

Learning data from information-based platforms is not fully used. Only 3.9% of teachers "fully use" platform data (such as micro-course learning duration and answer accuracy) for evaluation, 10.1% "mostly use" it, 48.9% "seldom use" it, and 19.1% "do not use" it. The adjustment of teaching strategies is delayed: 2.9% of teachers "adjust every time based on evaluation results", 8.6% "adjust in most cases", 52.5% "seldom adjust", and 17.6% "do not adjust", making it impossible to timely make up for students' learning gaps.

Existing Problem 18: Single evaluation subject, lack of participation from enterprises and students

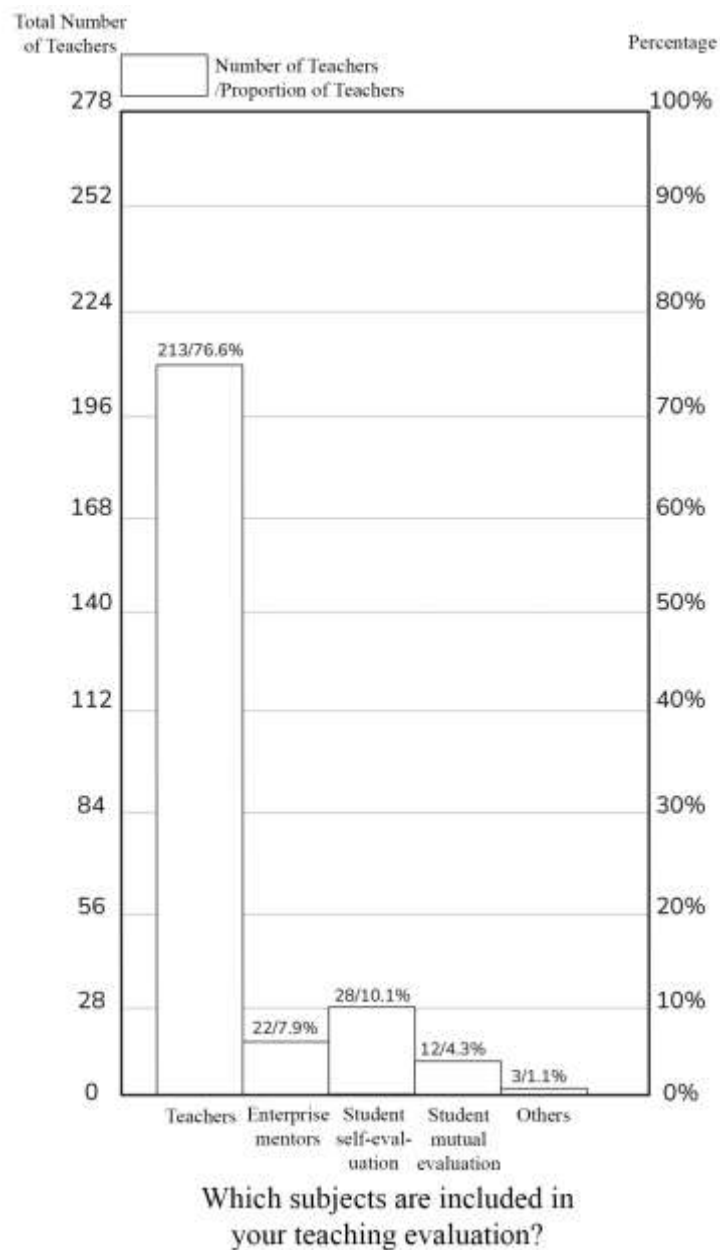


Figure 4.18 Existing Problem 18

The teaching evaluation subjects of accounting courses in higher vocational colleges show a significantly single feature, with seriously insufficient participation of enterprises and students: school full-time teachers have become the only core evaluation subject with an absolute proportion of 76.6%, which is far higher than the sum of all other subjects (23.4%). In contrast, the participation

proportion of enterprise tutors is only 7.9% (less than 10%), and the total proportion of students' self-evaluation and mutual evaluation is only 14.4%. Overall, this reflects that the evaluation system relies heavily on on-campus teachers, and the enterprise evaluation in the practical training link and the perspective of students' experience are obviously absent.

Phase 2 : To design a modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province

By systematically sorting out domestic and overseas literature and analyzing questionnaire data collected from 278 full-time accounting teachers across vocational colleges in Yunnan Province, this study screens, refines and forms the primary and secondary indicator system of the modernized accounting teaching model step by step. In terms of literature review, this paper sorts abundant previous studies covering vocational accounting teaching reform, the integration of curriculum, posts, certificates and competitions, in-depth combination of modern information technologies (intelligent teaching platforms, accounting simulation software, big data and generative artificial intelligence) with accounting instruction as well as situated cognition-based pedagogy. Drawing on proven reform paths and mature dimensions from existing research, together with local employment characteristics of Yunnan's small and micro enterprises and implementation rules of the 1+X vocational certificate system, six core first-level indicators are preliminarily determined, namely Teaching Objective Orientation, Teaching Content, Teaching Methods, Teaching Tools, Teaching Process and Teaching Evaluation.

Teaching Objective Orientation Dimension: Set tiered competency training goals aligned with accounting vocational criteria, local enterprise posts and 1+X certificate standards guided by big data-based talent demand analysis, solving the problems of ambiguous training positioning and disconnection between talent cultivation and real accounting industry needs.

Teaching Content Dimension: Update outdated curriculum content and realize in-depth integration of courses, posts, certificates and competitions with

resource support from generative AI and accounting simulation software, solving the problems of duplicated syllabus, outdated textbooks and severe separation between theoretical knowledge and corporate practical accounting work.

Teaching Methods Dimension: Reform traditional cramming teaching by applying generative AI-assisted case development and scenario teaching on intelligent platforms, solving the problem of monotonous teacher-centered lecturing and insufficient practical interactive classroom activities.

Teaching Tools Dimension: Replace single PPT-and-blackboard teaching with intelligent learning platforms, accounting simulation training software and generative AI tools, solving the problem of over-reliance on conventional teaching aids and idle informational teaching resources.

Teaching Process Dimension: Construct the standardized three-stage closed-loop teaching system (pre-class resource distribution, in-class collaborative discussion, post-class customized drill) based on intelligent platforms and big data tracking, solving fragmented teaching links and disjointed theoretical learning and offline practical training.

Teaching Evaluation: Multi-Dimensional Evaluation, Process-Oriented Evaluation and Diversified Evaluation Subjects are constructed to remedy over-reliance on final examinations and single evaluation participants.

This forms a logically closed-loop and directly implementable system framework. Therefore, the primary indicators, secondary indicators of the information-technology-driven modern teaching model for accounting majors in vocational colleges of Yunnan Province are shown in the figure below.

Table 4.2 Indicators at All Levels of the Model

First-level Indicator	Second-level Indicator
Teaching Objective Orientation	Occupational Role Competence Objective Course and Certificate Integration Objective Comprehensive Literacy Objective
Teaching Content	Structured Integration Content Update New Occupation Content "Course-Post-Certificate" Integration Content
Teaching Methods	Task-Driven Method Situational Interaction Method Project-Driven Teaching Method
Teaching Tools	Accounting Professional Training Tools Intelligent Teaching Platform
Teaching Process	Practice Teaching Enhancement Full-Process Teaching Process Double-Qualified Teacher Support
Teaching Evaluation	Multi-Dimensional Evaluation Process-Oriented Evaluation Diversified Evaluation Subjects

In the implementation step of the "Delphi Expert Method for Teaching Model Assessment", the study conducted three rounds of expert consultation using the Delphi method, and the contents of the questionnaires for these three rounds are detailed in Appendix C3, Appendix C4, and Appendix C5.

1. Data Analysis Process

1.1 Expert Response Rate

The expert response rate is defined as the questionnaire recovery rate (recovery rate = number of questionnaires returned / number of questionnaires

distributed), which reflects the level of expert engagement in the consultation. The questionnaire recovery status in this study is shown in Table 4.3.

Table 4.3 Questionnaire Recovery Status

	Distributed	Returned	Expert Response Rate
The First Round	17	17	100%
The Second Round	17	17	100%
The Third Round	17	17	100%

As shown in the table above, the expert response rate was 100 % in both rounds, indicating a high level of attention and engagement from the experts in this study.

1.2 Degree of Expert-Opinion Concentration

The arithmetic mean is used to represent the degree of concentration of expert opinions. Based on the results of the two rounds of expert consultation, the mean-value ranges for indicators at all levels are presented in Table 4.4.

Table 4.4 Consultation Mean Range

	The First Round	The Second Round	The Third Round
Valuation Content	Consultation Mean Range	Consultation Mean Range	Consultation Mean Range
First-level Indicator	3.2-4.1	3.5-4.3	3.7-4.5
Second-level Indicator	3.0-4.0	3.3-4.2	3.6-4.4

1.3 Expert Consensus Level

By calculating the coefficient of variation (CV) and the coefficient of concordance (W), we can determine whether experts' evaluations of each indicator diverge markedly and, consequently, assess the reliability of the scores obtained in each round. The specific procedures are as follows:

(1) Coefficient of Variation (CV): CV measures the degree of consistency among experts' ratings for each indicator. A smaller CV indicates greater agreement and a higher consensus level. When $CV < 0.25$, expert opinions are considered to have converged.

(2) Coefficient of Concordance (W): The coefficient of concordance reflects the extent to which the 17 experts agree on the weights assigned to indicators at every level. Kendall's W is used, ranging from 0 to 1; a higher W denotes stronger consensus. If the p-value associated with W is less than 0.05, the experts' ratings of the indicator system are deemed significantly consistent.

Based on the three rounds of expert consultation, the ranges of CV and the values of W for indicators at all levels are reported in the table below.

Table 4.5 Results of the first round of expert consultation

Valuation Content	CV	W	Chi-square Value	Degrees of Freedom (df)	P-value
First-level Indicator	0.18-0.24	0.62	31.2	6	$P < 0.05$
Second-level Indicator	0.19-0.25	0.58	58.5	17	$P < 0.05$

Table 4.6 Results of the second round of expert consultation

Valuation Content	CV	W	Chi-square Value	Degrees of Freedom (df)	P-value
First-level Indicator	0.15-0.21	0.71	36.8	6	P<0.05
Second-level Indicator	0.16-0.22	0.65	65.3	16	P<0.05

Table 4.7 Results of the third round of expert consultation

Valuation Content	CV	W	Chi-square Value	Degrees of Freedom (df)	P-value
First-level Indicator	0.12-0.18	0.80	42.5	6	P<0.05
Second-level Indicator	0.13-0.19	0.73	72.1	15	P<0.05

2. Analysis Results

In this study, indicators were screened by retaining only those with a mean score above 3 and a coefficient of variation (CV) below 0.25; all other indicators were excluded. This criterion was applied to the statistical analysis of every survey round.

2.1 Analysis of the result of the first round of expert consultation

In this round of evaluation, the research background, content, and objectives were fully explained to the 17 experts, and an electronic questionnaire together with a 5-point rating scale was provided. The questionnaire invited the experts to score the first- and second-level indicators and to submit revision suggestions. Based on their feedback, the “First Round of the Delphi Method Expert Questionnaire” was finalized (see Appendix C3 for details). A summary of the specific revisions is as follows:

(1) Experts suggested renaming the first-level indicator "Teaching Objective Orientation" to "Teaching Objective" for conciseness and clarity.

(2) Experts proposed adding a new second-level indicator under "Teaching Objective" - "Core Competency Goals for Emerging Roles", with the following description: Focusing on positions such as intelligent accounting and data-based taxation in small, medium, and micro enterprises, centering on the three core competencies of "accounting practice + big data application + position integration", to cultivate skilled talents who "understand accounting, master data, are proficient in practice, and excel in application"; incorporating content of newly added occupations such as carbon emission manager in the Classification of Occupations in the People's Republic of China (2022 Edition).

(3) Add a description to the newly included second-level indicator of "Teaching Content" - "'Course-Post-Certificate' Integration Content": Combining the requirements of accounting skills competitions, integrating software operation with VR virtual enterprise scenarios, and organizing "software operation + virtual scenario" competitions to enhance students' enthusiasm for learning through competitions.

(4) Delete the second-level indicator "Task-Driven Method" under "Teaching Methods", as it overlaps with the "Project-Driven Teaching Method".

(5) Add a new second-level indicator "Customized Specialized Tools" under the first-level indicator "Teaching Tools", with the description: Develop special tools for management accounting, such as "budget management systems" and "cost analysis modules", to ensure that the tools are accurately matched with the teaching content.

(6) Delete the second-level indicator "Double-Qualified Teacher Support" under "Teaching Process", as this second-level indicator does not belong to the scope of "Teaching Process".

In addition, after the experts scored the first-level indicators and second-level indicators, the collated data results are shown in the tables below.

Table 4.8 Results of the first round of expert consultation on first-level indicators

First-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Teaching Objective Orientation	0.85	2.8	0.30
Teaching Content	0.62	3.6	0.17
Teaching Methods	0.58	3.5	0.16
Teaching Tools	0.65	3.4	0.19
Teaching Process	0.70	3.3	0.21
Teaching Evaluation	0.55	3.7	0.15

As shown in the table, the mean score for the first-level indicator "Teaching Objective Orientation" is below 3 and its CV exceeds 0.25; therefore, this indicator is to be deleted.

Table 4.9 Results of the first round of expert consultation on second-level indicators

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Occupational Role Competence Objective	0.72	3.4	0.21
Core Competency Goals for Emerging Roles	0.80	3.2	0.25
Course and Certificate Integration Objective	0.68	3.5	0.19
Comprehensive Literacy Objective	0.60	3.6	0.17
Structured Integration Content	0.55	3.7	0.15
Update New Occupation Content	0.63	3.5	0.18
"Course-Post-Certificate" Integration Content	0.66	3.4	0.19

Table 4.9 (Continued)

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Task-Driven Method	0.88	2.7	0.33
Situational Interaction Method	0.59	3.6	0.16
Project-Driven Teaching Method	0.61	3.5	0.17
Accounting Professional Training Tools	0.64	3.4	0.19
Intelligent Teaching Platform	0.57	3.7	0.15
Customized Specialized Tools	0.71	3.3	0.22
Practice Teaching Enhancement	0.65	3.5	0.19
Full-Process Teaching Process	0.69	3.4	0.20
Double-Qualified Teacher Support	0.92	2.6	0.35
Multi-Dimensional Evaluation	0.53	3.8	0.14
Process-Oriented Evaluation	0.56	3.7	0.15
Diversified Evaluation Subjects	0.58	3.6	0.16

As shown in the table, the mean scores of the second-level indicators “Task-Driven Method” and “Double-Qualified Teacher Support” are both below 3 and their CV exceed 0.25; consequently, these two indicators are to be deleted.

2.2 Analysis of the result of the second round of expert consultation

A revised questionnaire, namely the "Second Round of the Delphi Method Expert Questionnaire" (see Appendix C4), was distributed to 13 experts for further opinions. The summarized feedback is as follows:

(1) Revise the description of the secondary element "Occupational Role Competence Objective" under the secondary element of "Teaching Objective": Clearly define the diverse needs of accounting positions in local enterprises in Yunnan Province, with a focus on covering job requirements of small, medium, and micro-enterprises, accounting agency companies, and financial shared service centers

in Yunnan. Reason: This helps clarify the scope of enterprises and enhances the feasibility of implementation.

(2) Rename the secondary element "Integration Goals of 'Curriculum - Certificate - Competition'" under "Teaching Objective" to "'Course - Certificate - Competition' Integration Goals", and revise its secondary element description to: Integrate the examination syllabi of relevant certificates into teaching objectives, such as the "1 + X" certificates (Junior Accounting Certificate, Intelligent Finance and Taxation Certificate, etc.), Python Financial Analysis Certification, and the standards of competitions like the "Keyun Cup".

(3) Add a description to the secondary element "Update New Occupation Content" under "Teaching Content": Incorporate content such as "Green Cost Accounting under the Dual Carbon Background" and "Cross - border Accounting Treatment under the RCEP Framework".

(4) Delete the secondary element "Accounting Professional Training Tools" and replace it with the broader secondary element "Intelligent Digital Training Tools" (scored at the secondary level).

(5) Add the secondary element "Intelligent Digital Training Tools" with the following description: Equip with financial RPA software, Python financial analysis libraries, and SQL financial database query systems; provide accounting calculation tools such as UFIDA U8 and Kingdee KIS; and prepare data processing tools including Excel, SPSS, and Power BI.

Meanwhile, after experts scored the first - level indicators and secondary indicators, the sorted data results are shown in the following tables.

Table 4.10 Results of the second round of expert consultation on first-level indicators

First-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Teaching Objective	0.68	3.6	0.19
Teaching Content	0.52	3.8	0.14
Teaching Methods	0.50	3.7	0.13
Teaching Tools	0.55	3.6	0.15
Teaching Process	0.58	3.5	0.17
Teaching Evaluation	0.48	3.9	0.12

As can be seen from the above tables, all first-level indicators have met the corresponding requirements and therefore should all be retained.

Table 4.11 Results of the second round of expert consultation on second-level indicators

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Occupational Role Competence Objective	0.60	3.7	0.16
Core Competency Goals for Emerging Roles	0.65	3.5	0.18
Integration Goals of "Course - Certificate - Competition"	0.58	3.6	0.16
Comprehensive Literacy Objective	0.51	3.8	0.13
Structured Integration Content	0.49	3.9	0.13
Update New Occupation Content	0.53	3.7	0.14
"Course-Post-Certificate" Integration Content	0.56	3.6	0.15
Situational Interaction Method	0.50	3.8	0.13

Table 4.11 (Continued)

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Project-Driven Teaching Method	0.52	3.7	0.14
Accounting Professional Training Tools	0.83	2.9	0.29
Intelligent Digital Training Tools	0.54	3.6	0.15
Intelligent Teaching Platform	0.47	3.9	0.12
Customized Specialized Tools	0.59	3.5	0.17
Practice Teaching Enhancement	0.52	3.7	0.14
Full-Process Teaching Process	0.55	3.6	0.15
Multi-Dimensional Evaluation	0.46	3.9	0.12
Process-Oriented Evaluation	0.49	3.8	0.13
Diversified Evaluation Subjects	0.51	3.7	0.11

As can be seen from the above table, the Mean of the secondary indicator "Accounting Professional Training Tools" is less than 3, and its CV (Coefficient of Variation) is greater than 0.25; therefore, this indicator should be deleted.

2.3 Analysis of the result of the third round of expert consultation

Based on the feedback results of the second round, adjustments were made to the teaching model, and the review questionnaire was updated. The focus was placed on the parts where experts had relatively large differences of opinion; meanwhile, the content of the questionnaire was simplified to concentrate on confirming a small number of key elements. Subsequently, the revised questionnaire ("Third Round of the Delphi Method Expert Questionnaire", see Appendix C4) was distributed to the experts. Finally, after collecting the feedback results, the following revision suggestions from the experts were obtained:

(1) Revise the description of the secondary element "Intelligent Teaching Platform" under "Teaching Tools" to: Utilize Rain Classroom and Xuexitong

to implement online-offline blended teaching. Reason: The previous description belongs to a part of the "Teaching Process" and should not be included in "Teaching Tools".

(2) Simplify the descriptions of all secondary elements to ensure the model is concise and effective.

Table 4.12 Results of the third round of expert consultation on first-level indicators

First-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Teaching Objective	0.55	3.8	0.14
Teaching Content	0.45	4.0	0.11
Teaching Methods	0.43	3.9	0.11
Teaching Tools	0.48	3.8	0.13
Teaching Process	0.50	3.7	0.13
Teaching Evaluation	0.42	4.1	0.10

Table 4.13 Results of the third round of expert consultation on second-level indicators

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
Occupational Role Competence Objective	0.51	3.9	0.13
Core Competency Goals for Emerging Roles	0.54	3.8	0.14
Integration Goals of "Course - Certificate - Competition"	0.49	3.9	0.13
Comprehensive Literacy Objective	0.44	4.0	0.11
Structured Integration Content	0.42	4.1	0.10
Update New Occupation Content	0.46	3.9	0.12

Table 4.13 (Continued)

Second-level Indicator	Standard Deviation	Mean	Coefficient of Variation
"Course-Post-Certificate" Integration	0.48	3.8	0.13
Content			
Situational Interaction Method	0.43	4.0	0.11
Project-Driven Teaching Method	0.45	3.9	0.12
Intelligent Digital Training Tools	0.47	3.8	0.15
Intelligent Teaching Platform	0.41	4.2	0.10
Customized Specialized Tools	0.50	3.7	0.13
Practice Teaching Enhancement	0.44	3.9	0.11
Full-Process Teaching Process	0.46	3.8	0.12
Multi-Dimensional Evaluation	0.40	4.2	0.10
Process-Oriented Evaluation	0.42	4.1	0.10
Diversified Evaluation Subjects	0.44	4.0	0.16

As can be seen from the above tables, from the first round to the third round, the average mean value of indicators at all levels increased by 0.3-0.5, and the average Coefficient of Variation (CV) decreased by 0.05-0.08. This indicates that the experts' opinions gradually converged after multiple rounds of feedback, which is in line with the core characteristic of the Delphi method, namely "iterative optimization".

After three rounds of iterative optimization through the Delphi method expert consultation, the first-level and second-level indicators of the model were finally determined. Based on this indicator system, the study further developed a education modern teaching model suitable for vocational and technical colleges in Yunnan Province. The details of the model are shown in the figure below.



Figure 4.19 Education Modern Teaching Model for Accounting Courses

The figure above shows a Modern Teaching Model for Accounting Courses, which builds a closed-loop, systematic teaching system for accounting courses around six dimensions: Teaching Objective, Teaching Content, Teaching Methods, Teaching Tools, Teaching Process, and Teaching Evaluation.

Phase 3: To evaluate the modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province

In the first and fourth step of this research phase, different results of analysis were produced, respectively. Details are shown below.

1. Results of analysis for the step of "Experts evaluate the questionnaire"

Five experts were invited to assess the teaching quality test questionnaire by using the Item Objective Congruence (IOC) method. They scored each item based on the evaluation form in Appendix C12, and the specific results are shown in Appendix D2. All items of the questionnaire have an IOC value of no less than 0.6, which proves that the questionnaire has satisfactory content validity and is suitable for the follow-up experiment.

2. Results of analysis for the step of “Two groups of teachers (experimental group and control group) do the pre-test” and “Two groups of teachers do the post-test”

To improve the teaching quality of accounting courses at Yunnan X Vocational and Technical College and explore the impact of new teaching methods on teachers' teaching competence, this experimental research was specially conducted. Thirty teachers who teach accounting courses were selected as the research subjects. Through an experimental design involving random grouping, pre-test, and post-test, the effectiveness of the new teaching methods was verified.

2.1 The basic information

The basic information of the 30 teachers who teach accounting courses is shown in the table below:

Table 4.14 Basic information of the two groups of teachers

	Type	Number of persons	Percentage
Gender	Male	15	50.00
	Female	15	50.00
Title	No title	4	13.3
	Assistant teachers	5	16.7
	Lecturer	7	23.3
	Associate Professor	8	26.7
	Professor	6	20.0
Years of teaching experience	3 years or less	8	26.7
	4-10 years	8	26.7
	11-20 years	7	23.3
	More than 20 years	7	23.3
Was the Model Applied?	Yes	15	50.00
	No	15	50.00

As explained in the study above, 15 teachers in the experimental group taught using the MIT model while 15 teaching in the comparison group did not teach using the MIT model. The experimental group was compared with the comparison group on 7 teaching dimensions in the table below.

2.2 Experimental Data and Analysis

(1) Pre-test Data and Analysis

To verify whether there are differences in the teaching quality levels between teachers in the experimental group and the control group before the start of the experimental intervention, and to ensure the randomness and fairness of grouping, the research conducted a unified pre-test on teachers of both groups using a "Teaching Quality Test Questionnaire" with good reliability and validity one week before the official launch of the experiment. The following first presents the raw data of this pre-test, providing a basic basis for subsequent statistical analysis and judging the consistency of the initial levels of the two groups.

Table 4.15 Raw Pre-test Data (Unit: Points)

No	Experimental Group	Control Group
1	68	67
2	70	69
3	73	72
4	66	65
5	71	72
6	69	68
7	76	75
8	67	66
9	72	71
10	67	68
11	75	74
12	69	70

Table 4.15 (Continued)

No	Experimental Group	Control Group
13	74	73
14	65	64
15	70	69

Table 4.16 Statistical Analysis of Pre-test

Group	Sample Size	Mean	Standard Deviation	Minimum Value	Maximum Value
Experimental Group	15	70.27	3.25	65	76
Control Group	15	69.87	3.18	64	75

Results of Difference Test: An independent samples t-test was conducted on the pre-test data of the two groups. The results showed $t = 0.32$ and $p = 0.75$ ($p > 0.05$), indicating that there was no significant difference in teaching competence between the experimental group and the control group before the experiment, and the grouping was random and fair.

(2) Post-test Data and Analysis

After the 5-week experimental intervention (the experimental group received training on new teaching methods, while the control group participated in traditional teaching and research activities), to test the actual impact of different intervention methods on teachers' teaching quality, the research conducted a unified post-test on the two groups of teachers using the same "Teaching Quality Test Questionnaire" as the pre-test, one week after the experiment concluded. The following first presents the raw data of this post-test, providing basic data support for subsequent analysis of the changes in teaching quality of the two groups of teachers and the comparison of the effects of different interventions.

Table 4.17 Raw Post-test Data (Unit: Points)

No	Experimental Group	Control Group
1	85	69
2	87	71
3	90	74
4	82	67
5	89	73
6	84	70
7	93	77
8	83	68
9	88	73
10	83	70
11	92	76
12	86	72
13	91	75
14	81	66
15	87	71

Table 4.18 Statistical Analysis of Post-test

Group	Sample Size	Mean	Standard Deviation	Minimum Value	Maximum Value
Experimental Group	15	87.40	3.82	81	93
Control Group	15	71.20	2.95	66	77

Intra-group Difference between Pre-test and Post-test: A paired samples t-test for the experimental group showed $t = -15.68$ and $p < 0.001$, indicating that the post-test score was significantly higher than the pre-test score. For

the control group, the paired samples t-test showed $t = -1.87$ and $p = 0.08$ ($p > 0.05$), indicating no significant difference between the pre-test and post-test scores.

Inter-group Difference in Post-test: An independent samples t-test showed $t = 13.25$ and $p < 0.001$, indicating that the post-test score of the experimental group was significantly higher than that of the control group.

2.3 Statistical Data Analysis

To systematically organize the core data throughout the experiment and clearly present the performance characteristics of teachers in the experimental group and the control group in the teaching quality test, this section will conduct in-depth analysis from three dimensions: descriptive statistical analysis, difference test, and effect size analysis, so as to provide comprehensive data support for verifying the effectiveness of the new teaching methods.

(1) Descriptive Statistical Analysis

To intuitively reflect the overall level and data distribution pattern of teachers in the experimental group and the control group in the teaching quality test before and after the experiment, the following will present the sample size, mean, standard deviation, minimum value and maximum value of the two groups in different assessment stages, so as to clarify the initial state of teaching quality of the two groups of teachers and the change trend after intervention

Table 4.19 Descriptive Statistical Analysis

Group	Evaluation Type	Sample Size	Mean	Standard Deviation	Minimum Value	Maximum Value
Experimental Group	Pre-test	15	70.27	3.25	65	76
Experimental Group	Post-test	15	87.40	3.82	81	93
Control Group	Pre-test	15	69.87	3.18	64	75
Control Group	Post-test	15	71.20	2.95	66	77

Table 4.19 presents descriptive statistics of pre-test and post-test teaching quality scores for the experimental group and control group, with 15 participants in each group.

In the pre-test, the mean score of the experimental group was 70.27 (SD=3.25, range: 65–76), while the control group had an average of 69.87 (SD=3.18, range: 64–75). The similar mean values, standard deviations and score ranges of the two groups indicated comparable baseline teaching quality before the intervention.

After the intervention, the experimental group's average score rose sharply to 87.40 (SD=3.82, range: 81–93), with a remarkable improvement of 17.13 points. In contrast, the control group only obtained a slight increase to 71.20 (SD=2.95, range: 66–77), gaining merely 1.33 points.

Visually, the descriptive results preliminarily reflect that the adopted teaching intervention exerted a prominent promoting effect on teachers' teaching quality in the experimental group, whereas the conventional teaching arrangement brought marginal improvement to the control group.

(2) Difference Test

Pre-test Difference Test: An independent samples t-test was conducted on the pre-test data of the two groups. The results showed $t = 0.32$ and $p = 0.75$ ($p > 0.05$), indicating that there was no significant difference in teaching

competence between the experimental group and the control group before the experiment, and the grouping was random and fair.

Intra-group Difference Test between Pre-test and Post-test:

Experimental Group: A paired samples t-test showed $t = -15.68$ and $p < 0.001$, indicating that the post-test teaching competence of the experimental group was significantly higher than the pre-test, and the training of new teaching methods had a significant effect.

Control Group: A paired samples t-test showed $t = -1.87$ and $p = 0.08$ ($p > 0.05$), indicating that there was no significant difference in the teaching competence of the control group between the pre-test and post-test, and traditional teaching and research activities had no obvious effect on improving teaching competence.

Post-test Difference Test: An independent samples t-test was conducted on the post-test data of the two groups. The results showed $t = 13.25$ and $p < 0.001$, indicating that after the experimental treatment, the teaching competence of the experimental group was significantly higher than that of the control group, and the intervention effect of the new teaching methods was better than that of traditional teaching and research activities.

(3) Effect Size Analysis

To further test the practical significance of the experimental effect, the Cohen's d effect size was calculated. The Cohen's d for the pre-test and post-test of the experimental group was 4.52 (large effect, $d > 0.8$), and the Cohen's d for the post-test between the two groups was 7.83 (large effect). This shows that the new teaching methods have an extremely strong practical effect on improving teachers' teaching competence.

Chapter 5

Conclusion Discussion and Recommendations

The purpose of this study is to design and evaluate a modern teaching model suitable for accounting courses in vocational and technical colleges in Yunnan Province, address issues such as the disconnection between theory and practice and outdated teaching content in traditional teaching, and further improve teaching quality and students' employability. The study is conducted in three progressive phases: 1) Understanding the current teaching status of accounting courses in vocational and technical colleges in Yunnan Province; 2) Designing and constructing a modern teaching model adapted to accounting courses in vocational and technical colleges in Yunnan Province; 3) Evaluating the practical application effect of this modern teaching model. The relevant content of the study is organized as follows:

Conclusion

Through a systematic three-phase study, the following core conclusions are drawn:

Phase 1: Significant deficiencies exist in multiple dimensions of the current teaching status of accounting courses in vocational and technical colleges in Yunnan Province

In this phase, a convenience sampling method was used to conduct a questionnaire survey among 300 accounting course teachers from 10 vocational and technical colleges in Yunnan Province (278 valid questionnaires were recovered, with an effective recovery rate of 92.7%). Combined with a literature review, the current teaching status was analyzed. The results show that there are obvious shortcomings in six dimensions: teaching objectives, teaching content, teaching methods, teaching tools, teaching process, and teaching evaluation:

Ambiguous positioning of teaching objectives: Only 11.9% of teachers "fully included" core accounting job skills in their teaching objectives, 7.9% of teachers "fully integrated" professional quality requirements such as professional ethics and business judgment ability, 6.8% of teachers' teaching objectives "fully aligned with" the accounting professional qualification examination syllabus, and 9.0% of teachers' teaching objectives "highly matched" the actual job skill requirements of enterprises. There is a serious disconnection between objectives and professional needs, examination requirements, and post standards.

Outdated and disorganized teaching content: 46.4% of courses had "moderate overlap" with other accounting courses, and 25.2% had "severe overlap"; Only 13.0% of teaching materials updated content such as accounting regulations and digital tools every year, and 20.1% of teaching materials "never updated"; 7.9% of teaching content "fully integrated" examination knowledge points of certificates, and 10.1% of teaching content was "completely designed" based on specific work tasks of accounting posts.

Traditional and single teaching methods: 67.6% of teachers spent more than 50% of class time on one-way theoretical lectures, and 58.3% of practical training courses were "completely" or "mostly" demonstration by teachers and imitation by students; Only 6.1% of teachers "used" interactive methods such as case teaching and situational simulation "in every class", and 3.9% of teaching "involved" real business scenarios "in every class"; 2.9% of teachers "fully integrated" the requirements of accounting skills competitions, and 5.4% "always adopted" school-enterprise collaborative teaching.

Insufficient digitalization of teaching tools: Only 10.1% of teachers "frequently used both" accounting practical training software and virtual simulation platforms, and 67.6% "seldom used" or "never used" them; 13.0% of teachers "fully covered" the whole process of pre-class preview, in-class interaction and post-class consolidation using intelligent teaching platforms, and 3.9% "used" the integrated platform for learning, practice, training and competition "in every class".

Fragmented teaching process: 41.0% of courses had a practical teaching hour ratio of $\leq 10\%$, and 62.6% of practical teaching was "completely" or "mostly" simulated operation; 3.9% of teachers "pushed" targeted preview resources "before every class", and 2.9% "provided" personalized after-class tutoring "every time"; 45.7% of teachers did not design a coherent teaching process according to the work tasks of accounting posts.

Result-oriented teaching evaluation while neglecting the process: 46.4% of courses had summative evaluation (final examination) accounting for more than 70% of the total score, 7.9% of evaluations had practical operation ability assessment accounting for more than 50%, and 6.1% "fully included" the professional quality dimension; 3.9% of teachers "fully used" learning data from information platforms for evaluation, and 2.9% "adjusted" teaching strategies "every time according to evaluation results"; 76.6% of evaluation subjects were only in-school teachers, enterprise mentors accounted for only 7.9%, and student self-evaluation and mutual evaluation accounted for less than 15%.

Phase 2: Construction of a modern teaching model for accounting courses with 6 first-level elements and 16 second-level elements

Based on the problems identified in the first phase and the improvement strategies sorted out from the literature, this study extracted the core elements of the teaching model and initially constructed the framework. Then, 17 experts who met the requirements of "master's degree or above in accounting or related finance and economics majors + more than 5 years of accounting teaching/practical experience" were invited to review and optimize through three rounds of the Delphi method:

First-round optimization: Deleted the "task-driven method" that overlapped with the "project-driven teaching method" and "double-qualified teacher support" that did not belong to the "teaching process", added second-level elements such as "core competency goals for emerging roles" and "customized specialized tools", and simplified "teaching objective orientation" to "teaching objective".

Second-round optimization: Clarified that the "occupational role competence objective" should cover the local needs of small and micro enterprises and accounting agencies in Yunnan, adjusted the "course and certificate integration objective" to the "integration goals of 'curriculum - certificate - competition'", replaced "accounting professional training tools" with "intelligent digital training tools", and supplemented new occupational content such as "green cost accounting under the dual-carbon background" and "cross-border accounting treatment under the RCEP framework".

Third-round optimization: Revised the description of "intelligent teaching platform" (focusing on the application of tools such as Rain Classroom and Super Star Learning Platform), simplified the expressions of all second-level elements, and finally determined a modern teaching model including 6 first-level elements ("Teaching Objective", "Teaching Content", "Teaching Methods", "Teaching Tools", "Teaching Process", "Teaching Evaluation") and 16 second-level elements such as "occupational role competence objective", "core competency goals for emerging roles", "structured integration content", "situational interaction method", "intelligent digital training tools", "practice teaching enhancement" and "multi-dimensional evaluation". The coordination coefficient (W) of the three rounds of expert consultation gradually increased, the coefficient of variation (CV) gradually decreased, and the P-value was all <0.05 . The experts' opinions were highly consistent, and the scientificity and practicality of the model were verified.

Phase 3: The modern teaching model can significantly improve the teaching quality of accounting courses

In this phase, an empirical test was conducted to evaluate the effect of the model:

Questionnaire validity meets standards: The compiled teaching quality test questionnaire was reviewed by 5 experts using the Index of Consistency (IOC) method. All items achieved an $\text{IOC} \geq 0.6$, indicating good validity and suitability for teaching quality evaluation.

Verification of grouping fairness: 30 accounting teachers were selected from Yunnan X Vocational and Technical College and randomly divided into an experimental group (15 teachers) and a control group (15 teachers). The pre-test results showed no significant difference in teaching ability between the two groups ($t=0.32$, $p=0.75$), indicating that the grouping conformed to the randomness principle.

Significant experimental effect: The experimental group applied the modern teaching model to carry out a 5-week teaching practice (including flipped classroom design, accounting case development, and information tool application), while the control group adopted traditional teaching and research activities (collective lesson preparation and experience sharing). The post-test data showed that:

The average post-test score of the experimental group (87.40 points) was significantly higher than its pre-test score (70.27 points, $t=-15.68$, $p<0.001$), while there was no significant difference between the pre-test and post-test scores of the control group ($t=-1.87$, $p=0.08$);

The average post-test score of the experimental group was significantly higher than that of the control group (71.20 points, $t=13.25$, $p<0.001$);

The Cohen's d for the pre-test and post-test of the experimental group was 4.52, and the Cohen's d for the post-test between the two groups was 7.83, both reaching a large effect size. This proves that the modern teaching model has statistical significance and practical application value in improving teaching quality.

Discussion

1. Effectiveness of the practical application of the modern teaching model

Addressing the pain points of traditional teaching in multiple dimensions: The model works in a full chain from "objectives - content - methods - tools - process - evaluation" to specifically address the problems identified in the first phase. For example, "occupational role competence objective" and "'course-post-certificate' integration content" solve the problem of disconnection between objectives and content; "situational interaction method" and "project-driven teaching method" break the traditional lecture-based model; "intelligent digital training tools" and "practice

teaching enhancement" make up for the shortcomings in digitalization and practice; "process-oriented evaluation" and "diversified evaluation subjects" improve the evaluation system, forming a closed-loop teaching improvement path.

Adapting to the regional characteristics and needs of Yunnan Province: In the "occupational role competence objective", the model clearly covers the needs of small and micro enterprises and accounting agencies in Yunnan. In the "update new occupation content", it includes content such as "green cost accounting under the dual-carbon background" and "cross-border accounting treatment under the RCEP framework", which is in line with the regional economic development and industrial needs of Yunnan. At the same time, considering the differences in educational resources between vocational colleges in Yunnan and developed regions, the model optimizes the utilization efficiency of existing resources through "customized specialized tools" and "intelligent teaching platforms", avoiding resource waste and having stronger regional applicability.

Dual empowerment of teachers and teaching process: During the experiment, teachers in the experimental group mastered new teaching skills such as flipped classrooms and digital tools through the application of the model, and their teaching ability shifted from "theory-oriented" to "practice-oriented". Through "real project practice" and "school-enterprise collaborative teaching", students were exposed to the actual business of enterprises, solving the problem of "being unable to apply what they have learned". Teachers reported that "classroom interactivity has significantly improved", and the matching degree between teaching objectives and students' employment needs has been significantly improved.

2. Feedback from expert review and practical application

Experts' recognition of the scientificity of the model: In the three rounds of the Delphi method, experts unanimously agreed that the model design conforms to the core requirements of "practicality and post-orientation" of vocational education, and integrates digital and regional elements, which is in line with the development trend of modern accounting education. For example, the experts' suggestions of "adding core competency goals for emerging roles" and "supplementing content

related to dual-carbon" further strengthened the model's adaptability to new industry needs and regional characteristics. At the same time, the experts' opinions on "deleting duplicate elements" and "adjusting the attribution of elements" made the model framework more concise and logical, avoiding the disconnection between theory and practice.

Feedback from teachers and students in practical application: In the practice at Yunnan X Vocational and Technical College, teachers generally believed that "intelligent digital training tools" (such as UFIDA U8 and Python financial analysis library) made teaching more in line with industry practices, and the "full-process teaching process" (pushing resources before class - interaction in class - tutoring after class) made teaching more systematic. Students reported that the "situational interaction method" and "post role-playing" made learning more interesting, and "practice teaching enhancement" (in-school studio + off-campus training base) improved their practical operation ability, and the gap with the needs of enterprise posts was gradually narrowed.

3. Research limitations and future prospects

Research limitations:

Narrow sample scope: The survey in the first phase only covered 10 vocational and technical colleges in Yunnan Province, and the experiment in the third phase was only carried out in one college. The representativeness of the sample is limited, and the applicability of the model in different types of vocational colleges (such as public and private colleges, and colleges at different levels) still needs to be verified;

Short research cycle: The experiment only lasted for 5 weeks, and the long-term application effect of the model (such as students' post-employment adaptability and career development potential) was not observed, making it difficult to fully evaluate the model's impact on students' long-term professional quality;

The evaluation dimension needs to be expanded: The current teaching quality evaluation is mainly based on teachers' teaching ability, and does not fully include dimensions such as students' learning effects (such as certificate passing rate

and employment salary) and enterprise evaluation (such as employer satisfaction). The evaluation system still needs to be improved.

Future prospects:

Expanding the application scenarios of the model: The model can be promoted to more vocational colleges in Yunnan Province and even vocational colleges in other underdeveloped regions with similar economic development levels to further verify its universality and promotion value. At the same time, the model can be tried in different accounting courses (such as "Financial Accounting", "Management Accounting" and "Tax Accounting") to explore the differentiated adaptation strategies for courses.

Integrating emerging technologies and concepts: In the future, the application of technologies such as Virtual Reality (VR) and Augmented Reality (AR) in "intelligent digital training tools" can be explored to build more realistic virtual enterprise accounting scenarios. At the same time, combined with the "integration of post, course, competition and certificate" policy, the connection between the model and 1+X certificates and accounting skills competitions can be further strengthened to improve students' professional competitiveness.

Improving long-term tracking and evaluation: A 1-3-year longitudinal study can be carried out to track the data of students in the experimental colleges, such as certificate acquisition, employment quality and job promotion. Combined with enterprise feedback, the long-term effect of the model can be comprehensively evaluated to provide data support for the continuous optimization of the model.

Recommendations

1. Recommendations for Yunnan vocational education management departments

Strengthening policy guidance and resource support: Introduce special policies to encourage vocational colleges to apply the modern teaching model in accounting courses, and include the promotion of the model in the key tasks of vocational education reform; Increase resource investment to equip colleges with

intelligent digital training tools (such as financial RPA software and ERP systems) and intelligent teaching platforms, support the construction of "in-school accounting studios" and "off-campus training bases", and solve the problem of insufficient resources in colleges.

Carrying out special teacher training: Formulate a "training plan for the modern teaching model of accounting courses", and regularly organize training for accounting teachers in vocational colleges across the province focusing on core contents such as "situational interaction method", "use of digital tools" and "project-driven teaching design"; Invite industry experts and enterprise mentors to participate in the training to improve teachers' practical teaching ability and industry connection ability.

Establishing a quality evaluation mechanism: Incorporate the application of the modern teaching model into the teaching quality evaluation indicators of vocational colleges, and regularly conduct teaching quality monitoring; Establish a multi-dimensional evaluation system involving "colleges - enterprises - students", and take students' certificate passing rate, enterprise satisfaction and employment quality as core evaluation indicators to guide colleges to pay attention to the practical application effect of the model.

2. Recommendations for vocational and technical colleges in Yunnan Province

Promoting the reconstruction of the curriculum system: According to the "teaching content" element of the modern teaching model, integrate the content of accounting courses according to the "post work process" and "knowledge progression logic", and delete overlapping content; Update teaching materials every year, supplement new business knowledge such as "dual-carbon" and "RCEP", and design modular content according to the examination points of 1+X certificates to realize in-depth integration of "course - post - certificate".

Strengthening the construction of the teaching staff: Select teachers to participate in the practice of the modern teaching model, form a teaching team composed of "in-school teachers + enterprise mentors", and carry out school-

enterprise collaborative teaching; Encourage teachers to participate in accounting industry practice (such as on-the-job training in enterprises) and guidance of accounting skills competitions, increase the proportion of "double-qualified" teachers, and ensure that teachers can skillfully guide students to solve practical business problems of enterprises.

Improving teaching support conditions: Build a digital teaching platform integrating learning, practice, training and competition, and equip it with practical training tools such as UFIDA U8, Kingdee KIS and Python financial analysis library; Establish stable off-campus training bases in cooperation with local accounting firms and enterprises, and arrange students for on-the-job internships regularly to ensure that the proportion of practical teaching hours is not less than 50% and solve the problem of disconnection between "theory and practice".

3. Recommendations for accounting course teachers

Actively changing teaching concepts and methods: Abandon the traditional "teacher-centered" concept, and adopt the "situational interaction method" and "project-driven teaching method" for teaching. For example, design real accounting cases of enterprises (such as tax treatment of small and micro enterprises in Yunnan) and organize students to conduct post role-playing (cashier - accountant - supervisor) so that students can master skills through interaction and practice; Make rational use of intelligent platforms such as Rain Classroom and Super Star Learning Platform to realize the whole-process teaching management of "before class - in class - after class".

Accurately connecting with post and certificate requirements: Clearly define the core skills of accounting posts (such as cashier practical operation and tax declaration) and the examination points of 1+X certificates (such as intelligent finance and taxation) in the design of teaching objectives, and integrate quality requirements such as professional ethics and data security into the whole teaching process; Adjust the teaching content according to the needs of local enterprises in Yunnan, such as adding cases of accounting agency business processing and cross-border e-commerce accounting calculation to improve the pertinence of teaching.

Attaching importance to teaching evaluation and reflection: Reduce the proportion of summative evaluation (control it below 50%), record students' learning data (such as micro-course duration and answer accuracy rate) through information platforms, and carry out process-oriented evaluation; Introduce multi-dimensional evaluation subjects such as enterprise mentors, student self-evaluation and student mutual evaluation to comprehensively evaluate students' "knowledge - skills - quality"; Regularly adjust teaching strategies according to evaluation results. For example, for students' weak "digital operation ability", increase practical training content such as Power BI data analysis and ERP system operation to continuously optimize teaching effect.

4. Directions for future research

Expanding the research sample and scope: Future research can expand the sample to all vocational and technical colleges in Yunnan Province, and even to provinces with similar economic development levels to Yunnan, such as Guizhou and Sichuan, to further verify the universality of the modern teaching model; At the same time, comparative analysis of different types of colleges (such as comprehensive vocational colleges and financial and economic vocational colleges) and teachers with different teaching ages can be included to explore the differentiated application paths of the model.

Deepening technology integration and model innovation: Study the application of VR/AR technology in accounting practical training, such as building a "virtual financial shared service center" scenario to allow students to experience the whole process of accounting operation in an immersive way; Explore the "artificial intelligence + teaching" model, such as using AI to analyze students' learning data and automatically generate personalized learning plans to improve teaching accuracy.

Carrying out long-term tracking and multi-dimensional evaluation: Design a 1-3-year longitudinal research plan to track the whole-process data of students from "learning - certificate acquisition - employment - career development", analyze the impact of the model on students' long-term employment quality, and introduce

external data such as enterprise satisfaction surveys and college teaching quality rankings to build a four-dimensional evaluation system of "teaching - learning - employment - enterprise", providing more comprehensive basis for the continuous optimization of the model.

In conclusion, the modern teaching model for accounting courses in vocational and technical colleges in Yunnan Province constructed in this study can effectively solve the pain points of traditional teaching and provide practical reference for the reform of accounting teaching in regional vocational colleges. In the future, it is necessary to promote the implementation and effectiveness of the model through policy support, college implementation, teacher practice and continuous research, help the high-quality development of the accounting major in vocational education in Yunnan Province, and cultivate more high-quality accounting skilled talents adapted to the needs of regional economy.

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Appendices

Appendix A

List of Specialists and Letters of Specialists Invitation
for IOC Verification

List of experts evaluating the “Questionnaire on the Current Situation of Accounting Course Teaching in Yunnan Vocational and Technical Colleges”

1. Professor, Master, Zhu Zhanguo, Shunde Polytechnic University, MBA from Heriot-Watt University (UK), Expert in Marketing
2. Professor, PhD, Lu Yun, Dali University, Expert in Law
3. Professor, Master, Yu Gong, Yunnan Urban Construction College, Expert in Accounting
4. Professor, Master, LuoSha, Xishuangbanna Vocational and Technical College, Expert in Accounting
5. Professor, Master, Yu Xinglong, Xishuangbanna Vocational and Technical College, Expert in Business Administration

List of Experts for evaluating Modern Teaching model

1. Professor, Ding Yi, Yunnan College of Business Management, Expert in Investment Banking.
2. Professor, PhD, Lu Yun, Dali University, Expert in Law
3. Master, Zhuoran Zhou, The University of Adelaide, Expert in Accounting.
4. Professor, Master, Yu Xinglong, Xishuangbanna Vocational and Technical College, Expert in Business Administration.
5. Master, Li Junyi, international school of management (Dortmund), Expert in International Management
6. Master, Xin Meng, The University of Adelaide, Expert in Accounting.
7. Professor, Master, Zhu Zhanguo, Shunde Polytechnic University, MBA from Heriot-Watt University (UK), Expert in Marketing
8. Master, Liu Yalun, Law School of Dongbei University of Finance and Economics (DUFE), Expert in Law
9. Master, Fu Ran, Boston University, Expert in Enterprise Risk Management
10. Professor, Master, Yu Gong, Yunnan Urban Construction College, Expert in Accounting
11. Professor, Master, LuoSha ,Xishuangbanna Vocational and Technical College, Expert in Accounting
12. Master, Yang Yu, Yunnan University, Expert in Business Administration (MBA)
13. Master, Yanziqi Mao, Queen Margaret University, Expert in International Hospitality and Tourism Management
14. Associate Professor, Master, Wang Lixin, Heilongjiang Vocational College, Expert in Financial Accounting and Cost Management
15. Lecturer, Master, Li Xiaomei, Tianjin Vocational Institute, Expert in Management Accounting and Financial Analysis
16. Associate Professor, Master, Zhang Wei, Nanjing Vocational University of Industry Technology, Expert in Tax Accounting and Corporate Financial Management
17. Lecturer, Master, Chen Siyuan, Chengdu Vocational and Technical College, Expert in Accounting Information Systems and Auditing

List of experts evaluating the “Questionnaire for Testing the Teaching Quality of the Modern Teaching Model for Accounting Courses in Vocational and Technical Colleges of Yunnan Province”

1. Professor, Master, Zhu Zhanguo, Shunde Polytechnic University, MBA from Heriot-Watt University (UK), Expert in Marketing
2. Professor, PhD, Lu Yun, Dali University, Expert in Law
3. Professor, Master, Yu Gong, Yunnan Urban Construction College, Expert in Accounting
4. Professor, Master, LuoSha, Xishuangbanna Vocational and Technical College, Expert in Accounting
5. Professor, Master, Yu Xinglong, Xishuangbanna Vocational and Technical College, Expert in Business Administration

Appendix B

Official Letter



Ref.No. MHESI 0643.14/ 346

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

November 2025

Subject: Invitation to validate research instrument
Dear Yanziqi Mao

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

The thesis advisory committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

With your expertise, we would like to ask your permission to validate the attached research instrument. In this regard, we would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Yours faithfully,

Assistant Professor Dr. Thanaput Chanchaen
(Vice Dean of Graduate School for Dean of Graduate School)

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Ref.No. MHESI 0643.14/ 345

Bansomdejchaopraya Rajabhat University
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November 2025

Subject: Invitation to validate research instrument
Dear Yang Yu

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Ref.No. MHESI 0643.14/ 344

Bansomdejchaopraya Rajabhat University
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Thonburi Bangkok 10600

November 2025

Subject: Invitation to validate research instrument
Dear Professor LuoSha

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Ref.No. MHESI 0643.14/ 337

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

November 2025

Subject: Invitation to validate research instrument
Dear Professor Yu XingLong

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Thonburi Bangkok 10600

November 2025

Subject: Invitation to validate research instrument
Dear Zhuoran Zhou

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Subject: Invitation to validate research instrument
Dear Professor Dr. Lu Yun

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Ref.No. MHESI 0643.14/ 335

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November 2025

Subject: Invitation to validate research instrument
Dear Professor Ding Yi

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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November 2025

Subject: Invitation to validate research instrument
Dear Professor Yu Gong

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Subject: Invitation to validate research instrument
Dear Fu Ran

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Subject: Invitation to validate research instrument
Dear Liu Yalun

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Bansomdejchaopraya Rajabhat University
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Subject: Invitation to validate research instrument
Dear Professor Zhu Zhanguo

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Subject: Invitation to validate research instrument
Dear Xin Meng

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November 2025

Subject: Invitation to validate research instrument
Dear Li Junyi

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Bansomdejchaopraya Rajabhat University
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7 April 2026

Subject: Invitation to validate research instrument

Dear Chen Siyuan

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Ref.No. MHESI 0643.14/ 109

Bansomdejchaopraya Rajabhat University
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7 April 2026

Subject: Invitation to validate research instrument

Dear Associate Professor Wang Lixin

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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7 April 2026

Subject: Invitation to validate research instrument

Dear Li Xiaomei

Miss Xu Yirong is a graduate student in Doctor of Philosophy Program in Digital Technology Management for Education of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province"

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Bansomdejchaopraya Rajabhat University
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7 April 2026

Subject: Invitation to validate research instrument

Dear Associate Professor Zhang Wei

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Appendix C

Research Instrument

Appendix C1: Questionnaire on the Current Situation of Accounting Course Teaching in Yunnan Vocational and Technical Colleges

To gain an in-depth understanding of the current situation of accounting course teaching in various vocational colleges in Yunnan Province, I have designed this questionnaire. Your true feedback will provide a key basis for teaching optimization. There are no right or wrong answers to the questionnaire. The data will only be used for academic research and will be strictly confidential. It takes about 15 minutes to fill out the questionnaire. Thank you for your support and cooperation!

I. Basic Information

1. Your gender:

☐ Male

☐ Female

2. Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

3. Your teaching experience in accounting at vocational colleges:

☐ 3 years or less

☐ 4-10 years

☐ 11-20 years

☐ More than 20 years

Instructions for Filling Out: For single-choice questions, please tick "v" in the box before the option that you think best matches the actual situation. For multiple-choice questions, please tick "v" in the boxes before all options that you think match the actual situation. If there is an option of "Others (please specify)" in a question and you think there is content to supplement, please fill in your opinions or suggestions in detail on the blank line.

II. Orientation of Teaching Objectives

1.Does your teaching objective include core accounting post skills?

- ☐ Fully include
- ☐ Mostly include
- ☐ Partially include
- ☐ Seldom include
- ☐ Not include

2.Does your teaching objective integrate professional quality requirements such as professional ethics and business judgment ability?

- ☐ Fully integrate
- ☐ Mostly integrate
- ☐ Partially integrate
- ☐ Seldom integrate
- ☐ Not integrate

3.Does your teaching objective align with the syllabus of accounting professional qualification examinations?

- ☐ Fully align
- ☐ Mostly align
- ☐ Partially align

☐ Seldom align

☐ Not align

4.Does your teaching objective match the actual post skill requirements of enterprises?

☐ Very matching

☐ Relatively matching

☐ Average

☐ Not very matching

☐ Completely not matching

5.Does your teaching objective cover practical operation ability, digital operation ability, and information processing ability?

☐ Fully cover

☐ Mostly cover

☐ Partially cover

☐ Seldom cover

☐ Not cover

III. Teaching Content

6.How repetitive is the content of your course with other accounting courses?

☐ No repetition

☐ Slight repetition

☐ Moderate repetition

☐ Severe repetition

7. Is the sequence of the courses you teach reasonable?

- ☐ Very reasonable
- ☐ Relatively reasonable
- ☐ Average
- ☐ Not very reasonable
- ☐ Completely unreasonable

8. How often are the contents such as accounting regulations and digital tools in teaching materials updated?

- ☐ Updated annually
- ☐ Updated every 2-3 years
- ☐ Updated every 4-5 years
- ☐ Never updated

9. Is the exam content of certificates fully integrated into your teaching content?

- ☐ Very fully integrated
- ☐ Relatively fully integrated
- ☐ Average
- ☐ Not very fully integrated
- ☐ Very not fully integrated

10. Is your teaching content designed based on specific work tasks of accounting posts?

- ☐ Fully based on
- ☐ Mostly based on
- ☐ Partially based on

☐ Seldom based on

☐ Not based on

IV. Teaching Methods

11. What is the proportion of time occupied by teachers' one-way theoretical lectures in your class?

☐ $\leq 10\%$

☐ 11%-30%

☐ 31%-50%

☐ 51%-70%

☐ $> 70\%$

12. Is your practical training class mainly based on teacher demonstration and student imitation, lacking students' independent exploration?

☐ Completely yes

☐ Mostly yes

☐ Partially yes

☐ Seldom yes

☐ No

13. Do you often use teaching methods such as case teaching, situational simulation, and role-playing in daily teaching?

☐ Use in every class

☐ Use in most classes

☐ Use in some classes

☐ Seldom use

☐ Do not use

14.Does your teaching involve real business scenarios?

- ☐ Involve in every class
- ☐ Involve in most classes
- ☐ Involve in some classes
- ☐ Seldom involve
- ☐ Do not involve

15.Do you integrate the requirements of accounting skill competitions into daily teaching?

- ☐ Fully integrate
- ☐ Mostly integrate
- ☐ Partially integrate
- ☐ Seldom integrate
- ☐ Do not integrate

16.Do you adopt school-enterprise collaborative teaching?

- ☐ Always adopt
- ☐ Often adopt
- ☐ Occasionally adopt
- ☐ Seldom adopt
- ☐ Never adopt

V. Teaching Tools

17. Do you use accounting practical training software and virtual simulation platforms in teaching?

- ☐ Often use both
- ☐ Often use only practical training software
- ☐ Often use only virtual simulation
- ☐ Seldom use
- ☐ Never use

18. When using the "smart teaching platform", does it cover "pre-class preview - in-class interaction - post-class consolidation"?

- ☐ Fully cover
- ☐ Mostly cover
- ☐ Partially cover
- ☐ Seldom cover
- ☐ Not cover

19. Do you use the integrated platform for learning, practice, training, and competition in teaching?

- ☐ Use in every class
- ☐ Use in most classes
- ☐ Use in some classes
- ☐ Seldom use
- ☐ Do not use

20. Do the cases in your practical training software cover accounting treatment for new business formats such as e-commerce and live streaming?

- ☐ Fully cover
- ☐ Mostly cover
- ☐ Partially cover
- ☐ Seldom cover
- ☐ Not cover

21. Do you use special accounting tools in teaching?

- ☐ Use in every class
- ☐ Use in most classes
- ☐ Use in some classes
- ☐ Seldom use
- ☐ Do not use

VI. Teaching Process

22. What is the proportion of "practical teaching hours" in the total teaching hours of your course?

- ☐ >50%
- ☐ 31%-50%
- ☐ 11%-30%
- ☐ ≤10%

23. Is your practical teaching mainly based on simulated operations, lacking contact with real business?

☐ Completely yes

☐ Mostly yes

☐ Partially yes

☐ Seldom yes

☐ No

24. Are the off-campus practical training opportunities sufficient for accounting majors in your college?

☐ Very sufficient

☐ Relatively sufficient

☐ Average

☐ Not very sufficient

☐ Very insufficient

25. Does your on-campus practical training cover multi-post collaboration (such as collaboration between cashiers, accountants, and supervisors) instead of single software operation?

☐ Fully cover

☐ Mostly cover

☐ Partially cover

☐ Seldom cover

☐ Not cover

26.Do you push targeted pre-class preview resources?

- ☐ Push before every class
- ☐ Push before most classes
- ☐ Push before some classes
- ☐ Seldom push
- ☐ Do not push

27.Do you organize interactive analysis (such as group discussion and case analysis) for key and difficult teaching points in class?

- ☐ Organize in every class
- ☐ Organize in most classes
- ☐ Organize in some classes
- ☐ Seldom organize
- ☐ Do not organize

28.Do you provide personalized guidance based on students' learning data after class?

- ☐ Provide every time
- ☐ Provide in most cases
- ☐ Provide in some cases
- ☐ Seldom provide
- ☐ Do not provide

29.Do you design a coherent teaching process based on accounting post tasks?

- ☐ Fully design based on post tasks
- ☐ Mostly design based on post tasks

☐ Partially design based on post tasks

☐ Do not design based on post tasks

30. Can you proficiently guide students to solve practical business problems of enterprises?

☐ Completely can

☐ Mostly can

☐ Partially can

☐ Seldom can

☐ Cannot

VII. Teaching Evaluation

31. What is the proportion of summative evaluation (final examination) in the total course score?

☐ $\leq 30\%$

☐ 31%-50%

☐ 51%-70%

☐ $> 70\%$

32. Does your teaching evaluation include the assessment of practical operation ability?

☐ Proportion $> 50\%$

☐ Proportion 31%-50%

☐ Proportion 11%-30%

☐ Proportion $\leq 10\%$

☐ Not included

33. Does your teaching evaluation include the dimension of professional literacy (such as teamwork and professional ethics)?

- ☐ Fully included
- ☐ Mostly included
- ☐ Partially included
- ☐ Seldom included
- ☐ Not included

34. Does your evaluation content align with the examination points of professional qualification certificates and the needs of enterprise posts?

- ☐ Fully align
- ☐ Mostly align
- ☐ Partially align
- ☐ Seldom align
- ☐ Not align

35. Do you use learning data from information-based platforms for evaluation?

- ☐ Fully use
- ☐ Mostly use
- ☐ Partially use
- ☐ Seldom use
- ☐ Do not use

36. Do you adjust teaching strategies in a timely manner based on evaluation results?

- ☐ Adjust every time
- ☐ Adjust in most cases

☐ Adjust in some cases

☐ Seldom adjust

☐ Do not adjust

37. Which subjects are included in your teaching evaluation? (Multiple choices allowed)

☐ Teachers

☐ Enterprise mentors (evaluating practical training performance)

☐ Student self-evaluation

☐ Student mutual evaluation

☐ Others _____

VIII. Open-Ended Questions

38. In your opinion, among the six dimensions of "orientation of teaching objectives, teaching content, teaching methods, teaching tools, teaching process, and teaching evaluation" in the current accounting teaching of vocational colleges, what is the most prominent problem? _____

39. To address the above problem, what improvement measures do you think are most needed? _____

Thank you for taking the precious time to participate in this questionnaire survey! Your opinions are crucial to my research and will provide highly valuable references for this study. If you have any questions during the filling process or need to know more relevant information, please feel free to contact me via the following email: 429256850@qq.com. I solemnly promise to strictly keep your personal information confidential and ensure the security of your privacy.

Appendix C2: Table of experts' evaluation of “Questionnaire on the Current Situation of Accounting Course Teaching in Yunnan Vocational and Technical Colleges”

To gain a comprehensive and in-depth understanding of the actual teaching situation in various vocational and technical colleges in Yunnan Province, I have designed and finalized a questionnaire. All the questions in the table below are derived from this questionnaire. I sincerely hope that through your professional evaluation and guidance, this questionnaire will meet the expected research standards in terms of scientificity, validity, and relevance.

Part 1: General information of the experts

1. Your gender:

☐ Male

☐ Female

2. Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

Part 2: Table of experts' evaluation of “Questionnaire on the Current Situation of Accounting Courses Teaching in Yunnan Vocational and Technical Colleges”

Filling Instructions: Each item is rated on a 3-point scale: -1 = Disagree, 0 = Neutral, 1 = Agree. Please write (√) in the box (□) corresponding to the score you believe this item deserves. Only one rating can be selected for each item.

I. Orientation of Teaching Objectives	For experts		
	-1	0	+1
1. Does your teaching objective include core accounting post skills?			
2. Does your teaching objective integrate professional quality requirements such as professional ethics and business judgment ability?			
3. Does your teaching objective align with the syllabus of accounting professional qualification examinations?			
4. Does your teaching objective match the actual post skill requirements of enterprises?			
5. Does your teaching objective cover practical operation ability, digital operation ability, and information processing ability?			

II. Teaching Content	For experts		
	-1	0	+1
1. How repetitive is the content of your course with other accounting courses?			
2. Is the sequence of the courses you teach reasonable?			
3. How often are the contents such as accounting regulations and digital tools in teaching materials updated?			
4. Is the exam content of certificates fully integrated into your teaching content?			
5. Is your teaching content designed based on specific work tasks of accounting posts?			

III. Teaching Methods	For experts		
	-1	0	+1
1. What is the proportion of time occupied by teachers' one-way theoretical lectures in your class?			
2. Is your practical training class mainly based on teacher demonstration and student imitation, lacking students' independent exploration?			
3. Do you often use teaching methods such as case teaching, situational simulation, and role-playing in daily teaching?			
4. Does your teaching involve real business scenarios?			
5. Do you integrate the requirements of accounting skill competitions into daily teaching?			
6. Do you adopt school-enterprise collaborative teaching?			

IV. Teaching Tools	For experts		
	-1	0	+1
1. Do you use accounting practical training software and virtual simulation platforms in teaching?			
2. When using the "smart teaching platform", does it cover "pre-class preview - in-class interaction - post-class consolidation"?			
3. Do you use the integrated platform for learning, practice, training, and competition in teaching?			
4. Do the cases in your practical training software cover accounting treatment for new business formats such as e-commerce and live streaming?			

IV. Teaching Tools	For experts		
	-1	0	+1
5. Do you use special accounting tools in teaching?			

V. Teaching Process	For experts		
	-1	0	+1
1.What is the proportion of "practical teaching hours" in the total teaching hours of your course?			
2. Is your practical teaching mainly based on simulated operations, lacking contact with real business?			
3. Are the off-campus practical training opportunities sufficient for accounting majors in your college?			
4.Does your on-campus practical training cover multi-post collaboration (such as collaboration between cashiers, accountants, and supervisors) instead of single software operation?			
5. Do you push targeted pre-class preview resources?			
6.Do you organize interactive analysis (such as group discussion and case analysis) for key and difficult teaching points in class?			
7.Do you provide personalized guidance based on students' learning data after class?			
8.Do you design a coherent teaching process based on accounting post tasks?			
9.Can you proficiently guide students to solve practical business problems of enterprises?			

VI. Teaching Evaluation	For experts		
	-1	0	+1
1.What is the proportion of summative evaluation (final examination) in the total course score?			
2. Does your teaching evaluation include the assessment of practical operation ability?			
3. Does your teaching evaluation include the dimension of professional literacy (such as teamwork and professional ethics)?			
4. Does your evaluation content align with the examination points of professional qualification certificates and the needs of enterprise posts?			
5. Do you use learning data from information-based platforms for evaluation?			
6.Do you adjust teaching strategies in a timely manner based on evaluation results?			
7.Which subjects are included in your teaching evaluation? (Multiple choices allowed)			

Appendix C3: First round of the Delphi method expert questionnaire

To accurately sort out the indicators at all levels of the modern teaching model of Yunnan Vocational and Technical College, this consultation is specially conducted, and we eagerly look forward to your contribution of valuable opinions and in-depth suggestions. We hereby promise that the results of this consultation will be strictly limited to the scope of academic research, so as to ensure the compliance and professionalism of data usage. Thank you sincerely for participating in this expert consultation.

Part 1: General information of the experts

Instructions: Please write a mark ✓ in ☐ corresponding to the actual situation about yourself.

1.Your gender:

☐ Male

☐ Female

2.Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

3.Your teaching experience in accounting at vocational colleges:

☐ 3 years or less

☐ 4-10 years

☐ 11-20 years

☐ More than 20 years

Part 2: Expert consultation on the elements of modern teaching model

Please rate the indicators at each level listed below and provide revision suggestions. The scoring range for this consultation is 1 to 5 points, with specific explanations as follows: 1 point represents "very unimportant", 2 points represent "unimportant", 3 points represent "average", 4 points represent "important", and 5 points represent "very important". Please mark a "v" in the box of the option that aligns with your opinion.

1. First-level indicators of the modern teaching model

First-level indicators	1	2	3	4	5	Suggestion
Teaching Objective Orientation						
Teaching Content						
Teaching Methods						
Teaching Tools						
Teaching Process						
Teaching Evaluation						

2. Second-level indicators of the modern teaching model

Second-level indicators	Description	1	2	3	4	5	Suggestion
Occupational Role Competence Objective	Set based on the core skills of the accounting post group (cashier, accounting, taxation, management accounting). For example, the cashier post focuses on "cash management + bill processing", and the taxation post focuses on "tax declaration + final settlement";Collaborate with local enterprises to clarify the different needs of accounting positions, and cultivate skilled talents capable of performing accounting work according to these needs.						
Course and Certificate Integration Objective	Incorporate the examination syllabuses of the Junior Accounting Professional Title and the Business-Finance Integration Certificate into the teaching objectives. For instance, transform certificate-related content such as "intelligent accounting processing" and "electronic invoice management" into teaching objectives to ensure students have the ability to obtain accounting professional certificates;Establish a "credit-certificate mutual recognition mechanism" (qualified certificates can be used to exempt corresponding course credits) to ensure that course objectives are compatible with certificate requirements.						
Comprehensive Literacy Objective	Cultivate students' "digital operation ability", such as conducting data analysis through ERP systems and Power BI;Cultivate students' "professional ethics", such as financial integrity						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	and confidentiality awareness;Cultivate students' "business judgment ability", such as the ability to handle abnormal accounting transactions.						
Structured Integration Content	Integrate course content according to the "post work process". For example, integrate content following the whole process of "account establishment → voucher preparation → bookkeeping → statement preparation → analysis";Integrate courses according to the "knowledge progression logic". For example, delete the duplicated content of "accounting element accounting" in Basic Accounting and Financial Accounting.						
Update New Occupation Content	Update teaching materials annually to supplement digital knowledge such as "Robotic Process Automation (RPA) operation for finance", "blockchain accounting", and "electronic tax bureau practice";Replace cases of traditional industrial enterprises with cases from emerging industries, such as e-commerce, live streaming, and cross-border e-commerce (e.g., "accounting for live streaming sales revenue" and "cross-border e-commerce tax refund processing").						
"Course-Post-Certificate" Integration Content	Design modular content based on the relevant examination points of the "1+X" certificate, such as the "intelligent accounting module" and "business-finance integration module";Design practical projects according to post tasks, such						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	as "monthly accounting processing for small and micro enterprises" and "design of enterprise cost control plans", and transform real enterprise businesses (agent bookkeeping, tax planning) into teaching content.						
Task-Driven Method	Adopt the "task-driven method", for example, divide students into groups and have them complete the task of "enterprise annual report preparation";Implement the "flipped classroom" (push micro-courses before class, conduct discussions and answer questions in class, and arrange review after class);Promote the "independent inquiry model" in practical training classes, allowing students to first attempt operations and then summarize problems, with teachers only providing targeted guidance.						
Situational Interaction Method	Use whole-process cases for systematic teaching to help students develop comprehensive post competence; conduct role-playing according to posts. For example, simulate posts such as "accountant - cashier - supervisor - tax officer" to create real business scenarios and strengthen the connection between theory and practice.						
Project-Driven Teaching Method	Participate in real projects and establish a "student + enterprise tutor" practical community;On-campus teachers and enterprise tutors provide guidance for "real business drills", enabling students to complete the whole						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	process from original vouchers to financial statements.						
Accounting Professional Practical Training Tools	Equip with accounting tools such as UFIDA U8 and Kingdee KIS; equip with data processing tools such as Excel, SPSS, and Power BI. For example, use Excel to build a "cost allocation model" in Cost Accounting and use Power BI for "financial data visualization" in Management Accounting.						
Intelligent Teaching Platform	Use platforms such as Rain Classroom and Chaoxing Learning Pass to realize online-offline blended teaching. For example, push micro-courses or preview task lists before class - conduct real-time quizzes and bullet screen discussions in class - push personalized exercises (based on wrong answer data) and online practical training tasks (e.g., "simulated enterprise accounting") after class.						
Practice Teaching Enhancement	Increase the proportion of practical teaching hours, which should account for more than 50% of the total teaching hours; Build a "campus + off-campus" dual base: establish an "accounting studio" on campus (undertaking real businesses such as agent bookkeeping and tax declaration for small and micro enterprises), and cooperate with enterprises and accounting firms to establish off-campus practical training bases to arrange students for on-post internships.						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Full-Process Teaching Process	Independent preview before class (resources pushed via the platform) - interactive practical operation in class (guidance from both school and enterprise) - project consolidation after class (enhancing practical ability).						
Double-Qualified Teacher Support	Improve teachers' practical ability: arrange teachers to work on secondment in enterprises regularly (participating in enterprise accounting processing, tax planning, etc.); carry out "accounting practice training" for young teachers to avoid the situation where "too much theory is taught while too little practical operation is instructed"; invite enterprise experts to give lectures and guide practical training on campus.						
Multi-Dimensional Evaluation	Reduce the proportion of summative evaluation (final exam) to less than 50%, increase the proportion of "practical operation assessment" (e.g., accuracy of accounting processing in UFIDA software, standardization of tax declaration); increase the weight of "professional quality assessment" (teamwork, professional ethics, data security).						
Process-Oriented Evaluation	Use information platforms to record whole-process data: before class (learning duration of micro-courses, completion of preview), in class (contributions to case discussions, accuracy of quizzes), after class (quality of homework, completeness of practical training reports). Generate students' learning reports monthly and include them in students' usual grades.						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Diversified Evaluation Subjects	Adopt the model of "on-campus teachers + enterprise tutors + student self-evaluation + student mutual evaluation": On-campus teachers evaluate students' theoretical knowledge and basic practical operations, accounting for 60% of students' grades; enterprise tutors fill in the Post Practical Operation Evaluation Form to evaluate students' post practical operations (e.g., accuracy of agent bookkeeping), accounting for 30% of students' grades; students conduct self-evaluation on their learning ability and mutual evaluation on teamwork ability, accounting for 10% of students' grades.						

Appendix C4: Second round of the Delphi method expert questionnaire

To accurately sort out the indicators at all levels of the modern teaching model of Yunnan Vocational and Technical College, this consultation is specially conducted, and we eagerly look forward to your contribution of valuable opinions and in-depth suggestions. We hereby promise that the results of this consultation will be strictly limited to the scope of academic research, so as to ensure the compliance and professionalism of data usage. Thank you sincerely for participating in this expert consultation.

Part 1: General information of the experts

Instructions: Please write a mark ✓ in ☐ corresponding to the actual situation about yourself.

1. Your gender:

☐ Male

☐ Female

2. Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

3. Your teaching experience in accounting at vocational colleges:

☐ 3 years or less

☐ 4-10 years

☐ 11-20 years

☐ More than 20 years

Part 2: Expert consultation on the elements of modern teaching model

Please rate the indicators at each level listed below and provide revision suggestions. The scoring range for this consultation is 1 to 5 points, with specific explanations as follows: 1 point represents "very unimportant", 2 points represent "unimportant", 3 points represent "average", 4 points represent "important", and 5 points represent "very important". Please mark a "v" in the box of the option that aligns with your opinion.

1. First-level indicators of the modern teaching model

First-level indicators	1	2	3	4	5	Suggestion
Teaching Objectives						
Teaching Content						
Teaching Methods						
Teaching Tools						
Teaching Process						
Teaching Evaluation						

2. Second-level indicators of the modern teaching model

Second-level indicators	Description	1	2	3	4	5	Suggestion
Occupational Role Competence Objective	Set based on the core skills of the accounting post group (cashier, accounting, taxation, management accounting). For example, the cashier post focuses on "cash management + bill processing", and the taxation post focuses on "tax declaration + final settlement"; collaborate with local enterprises to clarify the different needs of accounting positions, and cultivate skilled talents capable of performing accounting work according to these needs.						
Core Competency Goals for Emerging Roles	Focus on positions such as intelligent accounting and data-based taxation in small and micro enterprises, take "accounting practical operation + big data application + post integration" as the three core capabilities, and cultivate skilled talents who "understand accounting, master data, are capable of practical operations, and excel in application"; Incorporate content related to newly added occupations such as carbon emission manager in the Classification of Occupations in the People's Republic of China (2022 Edition).						
Course and Certificate Integration Objective	Incorporate the examination syllabuses of the Junior Accounting Professional Title and the Business-Finance Integration Certificate into the teaching objectives. For instance, transform certificate-related content such as						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	"intelligent accounting processing" and "electronic invoice management" into teaching objectives to ensure students have the ability to obtain accounting professional certificates; Establish a "credit-certificate mutual recognition mechanism" (qualified certificates can be used to exempt corresponding course credits) to ensure that course objectives are compatible with certificate requirements.						
Comprehensive Literacy Objective	Cultivate students' "digital operation ability", such as conducting data analysis through ERP systems and Power BI; Cultivate students' "professional ethics", such as financial integrity, teamwork, and confidentiality awareness; Cultivate students' "business judgment ability", such as the ability to handle abnormal accounting transactions.						
Structured Integration Content	Integrate course content according to the "post work process". For example, integrate content following the whole process of "account establishment → voucher preparation → bookkeeping → statement preparation → analysis"; Integrate courses according to the "knowledge progression logic". For example, delete the duplicated content of "accounting element accounting" in Basic Accounting and Financial Accounting.						
Update New Occupation	Update teaching materials annually to supplement digital knowledge such as						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Content	"Robotic Process Automation (RPA) operation for finance", "blockchain accounting", and "electronic tax bureau practice"; Replace cases of traditional industrial enterprises with cases from emerging industries, such as e-commerce, live streaming, and cross-border e-commerce (e.g., "accounting for live streaming sales revenue" and "cross-border e-commerce tax refund processing").						
"Course-Post-Certificate" Integration Content	Design modular content based on the relevant examination points of the "1+X" certificate, such as the "intelligent accounting module" and "business-finance integration module"; Design practical projects according to post tasks, such as "monthly accounting processing for small and micro enterprises" and "design of enterprise cost control plans", and transform real enterprise businesses (agent bookkeeping, tax planning) into teaching content; Combine the requirements of accounting skills competitions, integrate software operation with VR virtual enterprise scenarios, and carry out "software operation + virtual scenario" competitions to enhance students' learning enthusiasm through competitions.						
Situational Interaction Method	Use whole-process cases for systematic teaching to help students develop comprehensive post competence; Conduct role-playing according to posts. For example, simulate posts such as "accountant - cashier -						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	supervisor - tax officer" to create real business scenarios and strengthen the connection between theory and practice.						
Project-Driven Teaching Method	Participate in real projects and establish a "student + enterprise tutor" practical community;On-campus teachers and enterprise tutors provide guidance for "real business drills", enabling students to complete the whole process from original vouchers to financial statements.						
Accounting Professional Training Tools	Equip with accounting tools such as UFIDA U8 and Kingdee KIS;Equip with data processing tools such as Excel, SPSS, and Power BI. For example, use Excel to build a "cost allocation model" in Cost Accounting and use Power BI for "financial data visualization" in Management Accounting.						
Intelligent Teaching Platform	Use platforms such as Rain Classroom and Chaoxing Learning Pass to realize online-offline blended teaching. For example, push micro-courses or preview task lists before class - conduct real-time quizzes and bullet screen discussions in class - push personalized exercises (based on wrong answer data) and online practical training tasks (e.g., "simulated enterprise accounting") after class.						
Customized Specialized	Develop special tools for management accounting, such as a "budget management						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Tools	system" and "cost analysis module", to ensure that the tools are accurately matched with the teaching content.						
Practice Teaching Enhancement	Increase the proportion of practical teaching hours, which should account for more than 50% of the total teaching hours;Build a "campus + off-campus" dual base: establish an "accounting studio" on campus (undertaking real businesses such as agent bookkeeping and tax declaration for small and micro enterprises), and cooperate with enterprises and accounting firms to establish off-campus practical training bases to arrange students for on-post internships.						
Full-Process Teaching Process	Independent preview before class (resources pushed via the platform) - interactive practical operation in class (guidance from both school and enterprise) - project consolidation after class (enhancing practical ability).						
Multi-Dimensional Evaluation	Reduce the proportion of summative evaluation (final exam) to less than 50%, increase the proportion of "practical operation assessment" (e.g., accuracy of accounting processing in UFIDA software, standardization of tax declaration);Increase the weight of "professional quality assessment" (teamwork, professional ethics, data security).						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Process-Oriented Evaluation	Use information platforms to record whole-process data: before class (learning duration of micro-courses, completion of preview), in class (contributions to case discussions, accuracy of quizzes), after class (quality of homework, completeness of practical training reports). Generate students' learning reports monthly and include them in students' usual grades.						
Diversified Evaluation Subjects	Adopt the model of "on-campus teachers + enterprise tutors + student self-evaluation + student mutual evaluation"						

Appendix C5: Third round of the Delphi method expert questionnaire

To accurately sort out the indicators at all levels of the modern teaching model of Yunnan Vocational and Technical College, this consultation is specially conducted, and we eagerly look forward to your contribution of valuable opinions and in-depth suggestions. We hereby promise that the results of this consultation will be strictly limited to the scope of academic research, so as to ensure the compliance and professionalism of data usage. Thank you sincerely for participating in this expert consultation.

Part 1: General information of the experts

Instructions: Please write a mark ✓ in ☐ corresponding to the actual situation about yourself.

1. Your gender:

☐ Male

☐ Female

2. Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

3. Your teaching experience in accounting at vocational colleges:

☐ 3 years or less

☐ 4-10 years

☐ 11-20 years

☐ More than 20 years

Part 2: Expert consultation on the elements of modern teaching model

Please rate the indicators at each level listed below and provide revision suggestions. The scoring range for this consultation is 1 to 5 points, with specific explanations as follows: 1 point represents "very unimportant", 2 points represent "unimportant", 3 points represent "average", 4 points represent "important", and 5 points represent "very important". Please mark a "v" in the box of the option that aligns with your opinion.

1. First-level indicators of the modern teaching model

First-level indicators	1	2	3	4	5	Suggestion
Teaching Objectives						
Teaching Content						
Teaching Methods						
Teaching Tools						
Teaching Process						
Teaching Evaluation						

2. Second-level indicators of the modern teaching model

Second-level indicators	Description	1	2	3	4	5	Suggestion
Occupational Role Competence Objective	Set based on the core skills of the accounting post group (cashier, accounting, taxation, management accounting). For example, the cashier post focuses on "cash management + bill processing", and the taxation post focuses on "tax declaration + final settlement";Clarify the different needs of accounting positions in local enterprises in Yunnan Province, with a focus on covering the post needs of small and micro enterprises, agent bookkeeping companies, and financial sharing centers in Yunnan.						
Core Competence Goals for Emerging Roles	Focus on positions such as intelligent accounting and data-based taxation in small and micro enterprises, take "accounting practical operation + big data application + post integration" as the three core capabilities, and cultivate skilled talents who "understand accounting, master data, are capable of practical operations, and excel in application";Incorporate content related to newly added occupations such as carbon emission manager in the Classification of Occupations in the People's Republic of China (2022 Edition).						
"Course-Certificate-Competition" Integration	Incorporate the examination syllabuses of relevant certificates into the teaching objectives, such as the "1+X" certificates (Junior Accounting, Intelligent Finance and						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Objective	Taxation, etc.), Python Financial Analysis Certification, and the standards of competitions such as the "Keyun Cup".						
Comprehensive Literacy Objective	Cultivate students' "digital operation ability", such as conducting data analysis through ERP systems and Power BI; Cultivate students' "professional ethics", such as financial integrity, teamwork, and confidentiality awareness; Cultivate students' "business judgment ability", such as the ability to handle abnormal accounting transactions.						
Structured Integration Content	Integrate course content according to the "post work process". For example, integrate content following the whole process of "account establishment → voucher preparation → bookkeeping → statement preparation → analysis"; Integrate courses according to the "knowledge progression logic". For example, delete the duplicated content of "accounting element accounting" in Basic Accounting and Financial Accounting.						
Update New Occupation Content	Update teaching materials annually to supplement digital knowledge such as "Robotic Process Automation (RPA) operation for finance", "blockchain accounting", and "electronic tax bureau practice"; Adopt cases from emerging industries, such as e-commerce, live streaming, and cross-border e-commerce (e.g., "accounting for live streaming sales revenue" and "cross-border e-						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	commerce tax refund processing");Add content such as "green cost accounting under the dual-carbon background" and "cross-border accounting processing under the RCEP framework".						
"Course-Post-Certificate" Integration Content	Design modular content based on the relevant examination points of the "1+X" certificate, such as the "intelligent accounting module" and "business-finance integration module";Design practical projects according to post tasks, such as "monthly accounting processing for small and micro enterprises" and "design of enterprise cost control plans", and transform real enterprise businesses (agent bookkeeping, tax planning) into teaching content;Combine the requirements of accounting skills competitions, integrate software operation with VR virtual enterprise scenarios, and carry out "software operation + virtual scenario" competitions to enhance students' learning enthusiasm through competitions.						
Situational Interaction Method	Use whole-process cases for systematic teaching to help students develop comprehensive post competence;Conduct role-playing according to posts. For example, simulate posts such as "accountant - cashier - supervisor - tax officer" to create real business scenarios and strengthen the connection between theory and practice.						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Project-Driven Teaching Method	Participate in real projects and establish a "student + enterprise tutor" practical community; On-campus teachers and enterprise tutors provide guidance for "real business drills", enabling students to complete the whole process from original vouchers to financial statements.						
Intelligent Digital Training Tools	Equip with financial RPA software, Python financial analysis libraries, and SQL financial database query systems; equip with accounting tools such as UFIDA U8 and Kingdee KIS; Equip with data processing tools such as Excel, SPSS, and Power BI.						
Intelligent Teaching Platform	Use platforms such as Rain Classroom and Chaoxing Learning Pass to realize online-offline blended teaching. For example, push micro-courses or preview task lists before class - conduct real-time quizzes and bullet screen discussions in class - push personalized exercises (based on wrong answer data) and online practical training tasks (e.g., "simulated enterprise accounting") after class.						
Customized Specialized Tools	Develop special tools for management accounting, such as a "budget management system" and "cost analysis module", to ensure that the tools are accurately matched with the teaching content.						

Second-level indicators	Description	1	2	3	4	5	Suggestion
Practice Teaching Enhancement	Increase the proportion of practical teaching hours, which should account for more than 50% of the total teaching hours;Build a "campus + off-campus" dual base: establish an "accounting studio" on campus (undertaking real businesses such as agent bookkeeping and tax declaration for small and micro enterprises), and cooperate with enterprises and accounting firms to establish off-campus practical training bases to arrange students for on-post internships.						
Full-Process Teaching Process	Independent preview before class (resources pushed via the platform) - interactive practical operation in class (guidance from both school and enterprise) - project consolidation after class (enhancing practical ability).						
Multi-Dimensional Evaluation	Reduce the proportion of summative evaluation (final exam) to less than 50%, increase the proportion of "practical operation assessment" (e.g., accuracy of accounting processing in UFIDA software, standardization of tax declaration);Increase the weight of "professional quality assessment" (teamwork, professional ethics, data security).						
Process-Oriented Evaluation	Use information platforms to record whole-process data: before class (learning duration of micro-courses, completion of preview), in class (contributions to case discussions,						

Second-level indicators	Description	1	2	3	4	5	Suggestion
	accuracy of quizzes), after class (quality of homework, completeness of practical training reports). Generate students' learning reports monthly and include them in students' usual grades.						
Diversified Evaluation Subjects	Adopt the model of "on-campus teachers + enterprise tutors + student self-evaluation + student mutual evaluation"						

Appendix C6: Lesson one for “Fundamentals of Big Data Technology Application”

Lesson Title: Practical Operation of Big Data Analysis - Taking E-commerce Enterprises as an Example

Student groups being taught: Big Data Accounting Major, Freshmen students

Duration: 2 class hours

Teaching Objectives

(1) Post Competence Objectives

Require students to master solid theoretical knowledge of financial management, and understand the basic principles and methods of sales performance analysis, corporate financial statement analysis, and industry financial indicator analysis.

(2) Emerging Post Competence Objectives

Focus on accounting practice + big data application, cultivate financial management talents with big data analysis capabilities to meet the social demand for high-quality financial management talents.

(3) "Curriculum - Certificate - Competition" Integration Objectives

Integrate the content of relevant certificates and competitions such as the Intelligent Finance and Taxation Skills Competition and Python Financial Analysis Certification into the curriculum.

(4) Comprehensive Literacy Objectives

Cultivate students' data awareness and information literacy. Cultivate students' innovative thinking and practical ability, and encourage them to solve practical problems through data visualization.

Teaching Content

(1) Structurally Integrated Content

Deeply integrate the curriculum system with market demands, and strengthen the integration of financial analysis and business logic by reconstructing the financial big data analysis curriculum.

(2) "Curriculum - Post - Certificate" Integration Content

Provide students with the financial data of a large e-commerce enterprise from the school-enterprise cooperation base and the public information of its public welfare and charity activities. Encourage students to use Python scripts to complete data statistics and visualization of the enterprise in terms of public welfare donations, social responsibility investment, and employee welfare levels.

Teaching Methods

Situation Introduction: Introduce real enterprise projects, take the real project of an e-commerce enterprise as the background, and put forward relevant data analysis requirements.

Task Decomposition: Decompose the data processing process, and break down the problem into subtasks of data collection, cleaning, modeling, and visualization.

Group Collaboration: Divide team tasks, where group members act as data engineers, financial analysts, and other roles respectively to complete the tasks through division of labor and collaboration.

Achievement Presentation: Conduct visual reports.

Teaching Tools

(1) Digital and Intelligent Practical Training Tools

Be able to use Excel and Python for data analysis, and use tools like Matplotlib

and Pyecharts for data visualization.

(2) Smart Teaching Platform

Use Xuexitong (a smart teaching platform) to implement the three-stage teaching of pre-class, in-class, and post-class.

Teaching Process

(1) Strengthening Practical Teaching

Teachers demonstrate through cases and tools, guide students to proficiently use Python for data analysis, and master the basic usage methods and chart types of Matplotlib and Pyecharts libraries.

(2) Full-Process Teaching Process

Pre-class Stage: Teachers release a "Data Crawling Tool Preview Package" (including operation manual and micro-lecture videos) through the Xuexitong online platform. Students complete the task of crawling the financial report data of a large e-commerce company and submit a Data Collection Report. Teachers adjust the key points of the in-class teaching in a targeted manner.

In-class Stage: Through explanation and demonstration, help students understand the concept and basic methods of big data visualization. Moreover, by analyzing specific data visualization cases, help students understand the application scenarios, advantages, and disadvantages of different chart types.

Post-class Stage: Teachers can answer students' questions on Xuexitong and offer an optional course titled "Advanced Data Thinking", which covers content such as advanced Python modeling to help students achieve personalized growth and development.

Teaching Evaluation

(1) Multi-dimensional Evaluation

Introduce evaluation methods such as project reports and team cooperation assessment.

(2) Process-oriented Evaluation

Use the Xuexitong platform to record the full-process data, generate students' learning reports, and include them in students' usual grades.

(3) Multi-subject Evaluation

Teachers grade the Data Collection Report and Data Visualization Analysis submitted by students. At the same time, students are required to conduct self-evaluation and mutual evaluation during team cooperation.

Post-class Assignments

Clean, preprocess and analyze the sales data, and write an analysis report. Based on the analysis results, put forward at least three suggestions for improving the sales strategy.

Appendix C7: Lesson for “Fundamentals of Big Data Technology Application”

Lesson Title: Processing Financial Big Data with Power BI — Taking Profitability Analysis as an Example

Student groups being taught: Big Data Accounting Major, Freshmen students

Duration: 2 class hours

Teaching Objectives

(1) Post Competence Objectives

Require students to master solid theoretical knowledge of financial management,

and understand the basic principles and methods of sales performance analysis, corporate financial statement analysis, and industry financial indicator analysis.

(2) Emerging Post Competence Objectives

Focus on accounting practice + big data application, cultivate financial management talents with big data analysis capabilities to meet the social demand for high-quality financial management talents.

(3) "Curriculum - Certificate - Competition" Integration Objectives

Integrate the content of relevant certificates and competitions such as the Intelligent Finance and Taxation Skills Competition and Python Financial Analysis Certification into the curriculum.

(4) Comprehensive Literacy Objectives

Cultivate students' data awareness and information literacy. Cultivate students' innovative thinking and practical ability, and encourage them to solve practical problems through data visualization.

Teaching Content

(1) Structurally Integrated Content

By reconstructing the Financial Big Data Analysis curriculum, take the profitability analysis of a company as an example to explain in detail the application of Power BI in the Financial Big Data Analysis curriculum.

(2) "Curriculum - Post - Certificate" Integration Content

Optimize teaching content based on the "Industry-Finance-Taxation Big Data Integration Application" competition event and the orientation of the "1+X" Financial Big Data Analysis Vocational Certificate, so as to enhance students' ability to solve practical problems and adaptability to the market.

Teaching Methods

(1) Situational Interaction Method

Use multiple cases for teaching, strengthen situational creation, and focus on integrating theory with practice.

Before explaining practical operations, teachers should guide students to understand the principles and ideas behind operating Power BI.

(2) Project-Driven Teaching Method

Take "Analyzing the Profitability of a Company in Yunnan Using Power BI" as a project, and divide students into groups. Ensure each member in the group has a clear task. Arrange for students to discuss and exchange ideas on financial analysis within the group, integrate the analysis results, and present the analysis conclusions.

Teaching Tools

(1) Digital and Intelligent Practical Training Tool: Power BI

(2) Smart Teaching Platform: Use Xuexitong (a smart teaching platform) to implement the three-stage teaching model of pre-class, in-class, and post-class.

Teaching Process

(1) Strengthening Practical Teaching

Teachers need to demonstrate the entire process of public financial data analysis:

First, import the downloaded company financial statement data into the Power BI software.

Second, demonstrate the processes of data cleaning and data modeling to students, and conduct a brief analysis.

(2) Full-Process Teaching Process

Pre-Class Stage

Teachers assign tasks: require students to log in to financial websites to check the financial data of companies they are interested in, think about which data need to be collected for profitability indicator analysis, and understand the significance of profitability indicators.

In-Class Stage

Teachers explain the entire process of the experiment.

Use functions such as "quick answer" and "in-class exercises" on the Xuexitong software to test students' completion of pre-class tasks, so as to understand students' mastery of profitability indicators.

Post-Class Stage

Ask students to submit the phased results of the project on Xuexitong.

Teaching Evaluation

(1) Multi-Dimensional Evaluation

Through project presentations, assess students' performance in data analysis, decision-making plan design, and team cooperation.

(2) Process-Oriented Evaluation

Use the Xuexitong platform to record full-process data, generate students' learning reports, and include these reports in students' regular grades.

(3) Multi-Subject Evaluation

Teachers grade the project reports submitted by students; at the same time, students are required to conduct self-evaluation and mutual evaluation during team cooperation.

Post-class Assignments

Use Power BI software to clean and preprocess the data, analyze the company's profitability indicators, and propose strategies conducive to enhancing profitability.

Appendix C8: Lesson for “Management Accounting Practice”

Lesson Title: Forecasting Analysis

Student Groups Being Taught: Sophomores majoring in Big Data Accounting

Duration: 2 class hours

Teaching Objectives

(1) Post Competence Objectives

Cultivate students' ability to master the basic skills of forecasting analysis, so as to provide strong support for enterprises' strategic planning and daily operations.

(2) "Curriculum - Certificate - Competition" Integration Objectives

Integrate competition elements into the teaching of the course, so as to effectively stimulate students' learning enthusiasm and creativity.

(3) Comprehensive Literacy Objectives

Cultivate students' data awareness and analytical ability, and emphasize the importance of data - driven decision - making. Improve students' logical thinking ability and judgment, enabling them to learn to analyze problems rationally.

Teaching Content

(1) Structured Integrated Content

Closely align with the characteristics of the digital economy to update and optimize the course content. Embed knowledge points related to the digital economy. (2) "Curriculum - Post - Certificate" Integration Content

Deeply integrate the examination content of the "1 + X" primary and intermediate vocational skill level certificates with the course teaching content, so as to realize the connection between course learning and certificate preparation.

Teaching Methods

(1) Situational Interaction Method

Simulate the practical training environment with VR and AR technologies. Students can simulate the completion of forecasting and decision - making analysis tasks in a virtual environment, and gradually master the core skills of management accounting through repeated practice.

(2) Project - Driven Teaching Method

Students take on the task of analyzing specific cases in groups. Guide students to apply the forecasting and decision - making analysis methods of management accounting subjects to solve problems, and pay attention to students' participation in discussions and thinking, so that they can jointly think about and solve cost - behavior analysis problems.

Teaching Tools

Intelligent Teaching Platform: Use Rain Classroom to implement the three - stage teaching mode of pre - class, in - class and post - class.

Teaching Process

Full-Process Teaching Process :

Pre - class Stage

Teachers need to carefully design learning resources and task lists, release video preview tasks such as MOOCs (Massive Open Online Courses) or micro - courses, and require students to learn basic knowledge such as basic concepts, methods and principles.

In - class Stage

Through various forms such as group discussions and case studies, guide students

to deeply explore the core concepts and application scenarios of management accounting, and conduct centralized discussions and answers to the problems encountered by students in the self - study process.

Post - class Stage

Teachers summarize and conclude the content learned in this course, and send the key points of this course to students through Rain Classroom, so as to deepen students' understanding and mastery of the forecasting and decision - making analysis of management accounting subjects.

Teaching Evaluation

(1) Multi - dimensional Evaluation

Through the way of project presentation, assess students' understanding of the forecasting and decision - making analysis of management accounting subjects and their performance in the team.

(2) Process - oriented Evaluation

Use the Rain Classroom platform to record the whole - process data, generate students' learning reports, and include them in students' usual grades.

(3) Multi - subject Evaluation

Teachers score the project reports submitted by students, and at the same time require students to conduct self - evaluation and mutual evaluation in team cooperation.

Post-class Assignments

Analyze the operating strategy of an enterprise and put forward improvement suggestions. Design a production process optimization plan, including quality control and cost management measures. Explore the risks in supply chain management and corresponding response strategies, and form a report.

Appendix C9: Lesson for “Fundamentals of Management Accounting”

Lesson Title: Master Budget

Student groups being taught: Sophomores majoring in Management Accounting

Duration: 2 class hours

Teaching Objectives

(1) Post Competence Objectives

Cultivate students' ability to formulate the master budget for management accounting subjects, as well as to analyze and interpret the budget results of management accounting subjects.

(2) "Curriculum - Certificate - Competition" Integration Objectives

Integrate competition elements into the teaching of this chapter, so as to effectively stimulate students' learning enthusiasm and creativity.

(3) Comprehensive Literacy Objectives

Cultivate students' sense of responsibility, team cooperation awareness, and ability to analyze and solve problems; enhance students' financial awareness and comprehensive quality.

Teaching Content

(1) Structured Integrated Content

This chapter introduces intelligent budget formulation and monitoring systems, and uses digital technology to promote the reconstruction of traditional management accounting content.

(2) "Curriculum - Post - Certificate" Integration Content

Deeply integrate the examination content of the "1 + X" primary and intermediate vocational skill level certificates with the course teaching content, so as to realize the connection between course learning and certificate preparation.

Teaching Methods

(1) Situational Interaction Method

Enable students to communicate and share their budget formulation experience with each other through watching videos and group discussions. Focus on guiding students to participate in discussions, jointly think about and analyze the budget results of management accounting subjects, and discuss possible adjustment plans.

(2) Project - Driven Teaching Method

Invite corporate mentors to lead students in conducting projects. The mentors guide students to carry out financial analysis and decision - making with the help of artificial intelligence technology, use big data technology to predict market trends, and teach students to use simulated operation software to formulate more accurate budget plans, so as to improve the scientificity and accuracy of corporate decision - making.

Teaching Tools

(1) Digital - Intelligent Practical Training Tools: Use simulated operation software to allow students to personally experience the process of budget formulation and execution.

(2) Intelligent Teaching Platform: Use Rain Classroom to implement the three - stage teaching mode of pre - class, in - class and post - class.

Teaching Process

(1) Strengthening Practical Teaching

Implement the "dual - teacher" teaching model through school - enterprise

cooperation, where in - school teachers and corporate mentors jointly undertake teaching tasks. In - school teachers are responsible for guiding students to understand the theoretical knowledge ; corporate mentors can explain application cases, skills and methods of management accounting from a practical perspective, and strengthen practical teaching by leading students to conduct projects.

(2) Whole - Process Teaching Process

Pre - class Stage

Teachers release preview lists and briefly introduce the key and difficult points of this chapter on Rain Classroom, and require students to watch relevant videos for independent learning.

In - class Stage

Teachers explain in detail the methods and processes of formulating the master budget for management accounting subjects, analyze relevant cases, and guide students to practice the budget formulation of management accounting subjects. Finally, students are organized to conduct group discussions, communicate and share their budget formulation experience.

Post - class Stage

Teachers summarize and conclude the content learned in this course, emphasize the importance and practical application of management accounting subjects, and assign homework through Rain Classroom, requiring students to complete a master budget for management accounting subjects under the guidance of corporate mentors.

Teaching Evaluation

(1) Multi - dimensional Evaluation

Through project presentations, assess students' performance in data analysis, decision - making plan design and team cooperation.

(2) Process - oriented Evaluation

Analyze the accuracy rate of students' test answers and the completion degree of their homework through the Rain Classroom platform, and include these results in students' usual grades.

(3) Multi - subject Evaluation

Corporate mentors score the project reports submitted by students.

Post-class Assignments

Write a short thesis on the application of the standard cost control system.

Appendix C10: Lesson for “Fundamentals of Management Accounting”

Lesson Title: Strategic Management Accounting

Student groups being taught: Sophomores majoring in Management Accounting

Duration: 2 class hours

Teaching Objectives**(1) Post Competence Objectives**

Cultivate students' ability to apply the concepts and techniques of strategic management accounting to conduct cost control, performance evaluation, and performance management. Meanwhile, develop students' thinking on corporate strategic management and awareness of business process control.

(2) Emerging Post Competence Objectives

Shift from cultivating basic accounting - oriented talents to cultivating compound management accounting talents with data analysis and decision - support capabilities.

(3) "Curriculum - Certificate - Competition" Integration Objectives

Provide exam preparation materials for the knowledge points of this chapter, organize mock exams and competitions, etc., to help students systematically master the key points of the exam and improve their exam - taking ability.

(4) Comprehensive Literacy Objectives

Cultivate students' correct professional ethics, professional integrity, and sense of team cooperation, and emphasize the cultivation of integrity, responsibility, and professional literacy.

Teaching Content**(1) Structured Integrated Content**

The teaching content should integrate theory and practice. In the theoretical teaching, supplement content such as basic literacy of big data and basic literacy of financial digitalization; in practical operations, train students to write digital management accounting analyses and reports.

(2) "Curriculum - Post - Certificate" Integration Content

Deeply integrate the examination content of the "1 + X" primary and intermediate vocational skill level certificates with the course teaching content, so as to realize the connection between course learning and certificate preparation.

Teaching Methods

(1) Situational Interaction Method

Explain the basic concepts, theoretical frameworks, and methods of strategic management accounting through watching videos and group discussions. Teachers guide students to participate in discussions by analyzing real cases, enabling students to apply the knowledge of strategic management accounting to solve problems.

(2) Project - Driven Teaching Method

Students are divided into several groups and follow corporate mentors to participate in real corporate projects throughout the process. In this process, students learn to use the tools and techniques of strategic management accounting for cost control and performance evaluation.

Teaching Tools

Digital and Intelligent Practical Training Tool: Guide students to use the tools and techniques of strategic management accounting for practical operations.

(2) Smart Teaching Platform: Use Rain Classroom to implement the three - stage teaching mode of pre - class, in - class, and post - class.

Teaching Process

(1) Strengthening Practical Teaching

Implement the "dual - teacher" teaching model through school - enterprise cooperation. Corporate mentors can divide students into groups, let each group select an enterprise for research and analysis, and strengthen practical teaching by leading students to carry out projects. They will teach students to use the tools and techniques of strategic management accounting for cost control and performance evaluation.

(2) Full-Process Teaching Process

Pre - class Stage

Use the "Rain Classroom" teaching software to push course knowledge points in real time, helping students preview in advance and understand the key points of the course.

In - class Stage

Teachers introduce the concept, development history, and significance of strategic management accounting, and explain the relevant theoretical frameworks and methods. In addition, select cases to analyze the strategic decisions and strategic objectives of enterprises.

Post - class Stage

Teachers push chapter knowledge points and test questions through the teaching software, track students' learning status at any time, and adjust the teaching strategy for the next class to ensure the teaching effect.

Teaching Evaluation

(1) Multi - dimensional Evaluation

Assess students' understanding of strategic management accounting and their performance in application through homework submission and project

presentations.

(2) Process - oriented Evaluation

Analyze the accuracy rate of students' test answers and the completion degree of their homework through the Rain Classroom platform, and include these results in students' usual grades.

(3) Multi - subject Evaluation

Teachers score students' in - class performance, group discussion participation, and case analysis performance; corporate mentors evaluate students' practical operation performance; students score their own learning status through self - evaluation and mutual evaluation.

Post-class Assignments

Analyze the strategic objectives and implementation plan of an enterprise, and use the methods of strategic management accounting to conduct analysis and evaluation.

Appendix C11: Questionnaire for Testing the Teaching Quality of the Modern Teaching Model for Accounting Courses in Vocational and Technical Colleges of Yunnan Province

To evaluate the application effect of the modern teaching model for accounting courses in vocational and technical colleges of Yunnan Province, accurately grasp the changes in teaching quality, and provide data support for teaching optimization, we have designed this questionnaire. Your true feedback is crucial to the research. There is no right or wrong answer to the questionnaire. All data will only be used for academic research, and your personal information will be strictly kept confidential. It takes about 8-10 minutes to fill out the questionnaire. Thank you for your support and cooperation.

Part 1: General information of the teachers

Instructions: Please write a mark ✓ in ☐ corresponding to the actual situation about yourself.

1. Your gender:

☐ Male

☐ Female

2. Your professional title:

☐ No title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

3. Your years of teaching accounting in vocational colleges:

☐ 3 years or less

☐ 4-10 years

☐ 11-20 years

☐ More than 20 years

4. Do you apply the modern teaching model for accounting courses in your teaching?

☐ Yes

☐ No

Part 2: Questionnaire for Testing the Teaching Quality

The following scale covers different dimensions of accounting major teaching in vocational colleges of Yunnan Province. Please rate each item using the Likert scale below based on your actual teaching situation. This scale adopts a 5-point scoring system, with scores decreasing sequentially from 5 to 1 (i.e., 5 points is the highest score and 1 point is the lowest score). Please mark "v" in the box corresponding to each item. Note that only one score can be selected for each item; multiple selections or omissions are not allowed.

II. Teaching Objectives

1.Does your teaching objective clearly cover the core skills of accounting positions (such as cash register, accounting, taxation and other position skills)?

☐ Fully covered

☐ Mostly covered

☐ Partially covered

☐ Seldom covered

☐ Not covered

2.Does your teaching objective integrate the "curriculum-certificate-competition" integration requirements (such as 1+X certificate, accounting skills competition standards)?

- ☐ Fully integrated
- ☐ Mostly integrated
- ☐ Partially integrated
- ☐ Seldom integrated
- ☐ Not integrated

3.Does your teaching objective match the actual position needs of local enterprises in Yunnan Province (such as small and micro enterprises, agency accounting companies)?

- ☐ Very matched
- ☐ Relatively matched
- ☐ Generally matched
- ☐ Not very matched
- ☐ Completely not matched

III. Teaching Content

1.Is your teaching content integrated according to the "post work process", with no repetition and clear logic?

- ☐ Fully integrated according to the process
- ☐ Mostly integrated according to the process
- ☐ Partially integrated according to the process
- ☐ Seldom integrated according to the process
- ☐ Not integrated according to the process

2.Is your teaching content updated every year, covering knowledge of new business formats such as green cost accounting under the background of "double carbon" and cross-border accounting under the RCEP framework?

- ☐ Updated every year and fully covered
- ☐ Updated every 2-3 years and mostly covered
- ☐ Updated every 4-5 years and partially covered
- ☐ Seldom updated and seldom covered
- ☐ Never updated and not covered

3. Is your teaching content designed with practical projects combined with specific work tasks of accounting positions?

- ☐ Fully combined
- ☐ Mostly combined
- ☐ Partially combined
- ☐ Seldom combined
- ☐ Not combined

IV. Teaching Methods

1. Do you use situational interaction methods (such as role-playing of positions, real business case analysis) in your teaching?

- ☐ Used in every class
- ☐ Used in most classes
- ☐ Used in some classes
- ☐ Seldom used
- ☐ Not used

2. Do you adopt the project-driven teaching method and organize students to participate in real business projects jointly guided by "in-school teachers + enterprise tutors"?

- ☐ Always adopt

- ☐ Often adopt
- ☐ Occasionally adopt
- ☐ Seldom adopt
- ☐ Never adopt

3. Is the proportion of time for teachers to give one-way theoretical lectures in your class less than 50%, with emphasis on increasing student interaction?

- ☐ Far less than 50% ($\leq 30\%$)
- ☐ Less than 50% (31%-49%)
- ☐ Equal to 50%
- ☐ More than 50% (51%-70%)
- ☐ Far more than 50% ($\geq 71\%$)

4. Do you integrate the requirements of accounting skills competitions into daily teaching and carry out "software operation + virtual scenario" competition activities?

- ☐ Fully integrated and often carried out
- ☐ Mostly integrated and occasionally carried out
- ☐ Partially integrated and seldom carried out
- ☐ Seldom integrated and rarely carried out
- ☐ Not integrated and not carried out

V. Teaching Tools

1. Do you often use intelligent digital training tools (such as UFIDA U8, Kingdee KIS, Python financial analysis library, etc.) in your teaching?

- ☐ Often use both

- ☐ Often use only accounting tools
- ☐ Often use only data processing tools
- ☐ Seldom use
- ☐ Never use

2.Do you use intelligent teaching platforms (such as Rain Classroom, Chaoxing Learning Platform) to achieve full-process coverage of "pre-class preview - in-class interaction - post-class consolidation"?

- ☐ Fully covered
- ☐ Mostly covered
- ☐ Partially covered
- ☐ Seldom covered
- ☐ Not covered

3.Do the cases in your training software cover the accounting treatment of new business formats such as e-commerce and live streaming?

- ☐ Fully covered
- ☐ Mostly covered
- ☐ Partially covered
- ☐ Seldom covered
- ☐ Not covered

VI. Teaching Process

1.What is the approximate proportion of practical teaching hours in the total teaching hours of your course?

- ☐ 60% and above

☐ 41%-60%

☐ 21%-40%

☐ 11%-20%

☐ 10% and below

2.Has your teaching process formed a closed loop of "pushing preview resources before class - interactive practical operation in class - strengthening projects after class"?

☐ Fully formed a closed loop

☐ Mostly formed a closed loop

☐ Partially formed a closed loop

☐ Seldom formed a closed loop

☐ Not formed a closed loop

3.Do you carry out practical teaching relying on "in-school accounting studio + off-campus enterprise training base" to enable students to contact real business?

☐ Always rely on and contact real business

☐ Often rely on and partially contact real business

☐ Occasionally rely on and seldom contact real business

☐ Seldom rely on and only conduct simulation operations

☐ Not rely on and no contact with real business

VII. Teaching Evaluation

1.What is the approximate proportion of summative evaluation (final exam) in the total score of your course?

☐ 20% and below

☐ 21%-35%

☐ 36%-50%

☐ 51%-70%

☐ 71% and above

2.Do you use learning data from information platforms (such as micro-course duration, answer accuracy rate) to carry out process-oriented evaluation and generate students' learning reports monthly?

☐ Fully use and generate monthly

☐ Mostly use and generate every 2 months

☐ Partially use and generate every semester

☐ Seldom use and generate occasionally

☐ Not use and not generate

3.Is the assessment of professional literacy (such as teamwork, financial integrity, confidentiality awareness) included in your teaching evaluation?

☐ Fully included with high weight

☐ Mostly included with relatively high weight

☐ Partially included with general weight

☐ Seldom included with low weight

☐ Not included

4.Does the subject of your teaching evaluation include "in-school teachers + enterprise tutors + students' self-evaluation + students' mutual evaluation"?

☐ All included

☐ 3 types of subjects included

☐ 2 types of subjects included

☐ Only 1 type of subject included

☐ Only teacher evaluation

Thank you for taking the precious time to participate in this questionnaire survey! Your opinions are crucial to me and will provide extremely valuable references for this research. If you have any questions during the filling process or need to know more relevant information, please feel free to contact me via the following email: 429256850@qq.com. I solemnly promise to strictly keep your personal information confidential and ensure the security of your privacy.

Appendix C12: Table of experts' evaluation of “Questionnaire for Testing the Teaching Quality of the Modern Teaching Model for Accounting Courses in Vocational and Technical Colleges of Yunnan Province”

To gain a comprehensive understanding of the teaching quality of accounting majors in various vocational and technical colleges in Yunnan Province, I have designed a teaching quality test questionnaire. All the questions in the table below are derived from the content of this questionnaire. I sincerely hope that through your professional evaluation, this questionnaire can meet the requirements in terms of scientificity, validity and relevance.

Part 1: General information of the experts

Instructions: Please write a mark ✓ in ☐ corresponds to the actual situation about yourself.

1.Your gender:

☐ Male

☐ Female

2.Your professional title:

☐ No Title

☐ Teaching Assistant

☐ Lecturer

☐ Associate Professor

☐ Professor

Part 2: Table of experts' evaluation of “Questionnaire for Testing the Teaching Quality of the Modern Teaching Model for Accounting Courses in Vocational and Technical Colleges of Yunnan Province”

Instructions: Please rate each question item. Each item is rated on a 3-point scale: -1 = Disagree, 0 = Neutral, 1 = Agree. Please write ✓ in the space corresponding to each item. Only one rating can be selected for each item.

I. Teaching Objectives	For experts		
	-1	0	+1
1. Does your teaching objective clearly cover the core skills of accounting positions (such as cash register, accounting, taxation and other position skills)?			
2. Does your teaching objective integrate the "curriculum-certificate-competition" integration requirements (such as 1+X certificate, accounting skills competition standards)?			
3. Does your teaching objective match the actual position needs of local enterprises in Yunnan Province (such as small and micro enterprises, agency accounting companies)?			

II. Teaching Content	For experts		
	-1	0	+1
1. Is your teaching content integrated according to the "post work process", with no repetition and clear logic?			
2. Is your teaching content updated every year, covering knowledge of new business formats such as green cost accounting under the background of "double carbon" and cross-border accounting under the RCEP framework?			
3. Is your teaching content designed with practical projects combined with specific work tasks of accounting positions?			

III. Teaching Methods	For experts		
	-1	0	+1
1. Do you use situational interaction methods (such as role-playing of positions, real business case analysis) in your teaching?			
2. Do you adopt the project-driven teaching method and organize students to participate in real business projects jointly guided by "in-school teachers + enterprise tutors"?			
3. Is the proportion of time for teachers to give one-way theoretical lectures in your class less than 50%, with emphasis on increasing student interaction?			
4. Do you integrate the requirements of accounting skills competitions into daily teaching and carry out "software operation + virtual scenario" competition activities?			

IV. Teaching Tools	For experts		
	-1	0	+1
1. Do you often use intelligent digital training tools (such as UFIDA U8, Kingdee KIS, Python financial analysis library, etc.) in your teaching?			
2. Do you use intelligent teaching platforms (such as Rain Classroom, Chaoxing Learning Platform) to achieve full-process coverage of "pre-class preview - in-class interaction - post-class consolidation"?			
3. Do the cases in your training software cover the accounting treatment of new business formats such as e-commerce and live streaming?			

V. Teaching Process	For experts		
	-1	0	+1
1.What is the approximate proportion of practical teaching hours in the total teaching hours of your course?			
2. Has your teaching process formed a closed loop of "pushing preview resources before class - interactive practical operation in class - strengthening projects after class"?			
3. Do you carry out practical teaching relying on "in-school accounting studio + off-campus enterprise training base" to enable students to contact real business?			

VI. Teaching Evaluation	For experts		
	-1	0	+1
1.What is the approximate proportion of summative evaluation (final exam) in the total score of your course?			
2.Do you use learning data from information platforms (such as micro-course duration, answer accuracy rate) to carry out process-oriented evaluation and generate students' learning reports monthly?			
3. Is the assessment of professional literacy (such as teamwork, financial integrity, confidentiality awareness) included in your teaching evaluation?			
4.Does the subject of your teaching evaluation include "in-school teachers + enterprise tutors + students' self-evaluation + students' mutual evaluation"?			

Appendix D

The Results of the Quality Analysis of Research Instruments

Appendix D1: The results of experts' evaluation of “Questionnaire on the Current Situation of Accounting Course Teaching in Yunnan Vocational and Technical Colleges”

Experts scored each item of the questionnaire using the IOC (Item Objective Congruence) method, with the assessment focusing on "the relevance between items and measurement objectives". In this table, E1 to E5 correspond to the evaluation results of the five experts in sequence. The specific scoring criteria are as follows: 1 point (the item is highly relevant to the measurement objective), 0 points (moderately relevant), and -1 point (not relevant).

I. Orientation of Teaching Objectives	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Does your teaching objective include core accounting post skills?	1	1	0	0	1	0.6
2. Does your teaching objective integrate professional quality requirements such as professional ethics and business judgment ability?	1	0	1	0	1	0.6
3.Does your teaching objective align with the syllabus of accounting professional qualification examinations?	1	1	0	1	1	0.8
4. Does your teaching objective match the actual post skill requirements of enterprises?	1	0	1	1	1	0.8
5.Does your teaching objective cover practical operation ability, digital operation ability, and information processing ability?	0	1	1	1	1	0.8

II. Teaching Content	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1.How repetitive is the content of your course with other accounting courses?	1	1	0	0	1	0.6
2. Is the sequence of the courses you teach reasonable?	1	0	1	0	1	0.6
3. How often are the contents such as accounting regulations and digital tools in teaching materials updated?	1	1	0	1	1	0.8
4. Is the exam content of certificates fully integrated into your teaching content?	1	0	1	1	1	0.8
5. Is your teaching content designed based on specific work tasks of accounting posts?	0	1	1	1	0	0.6

III. Teaching Methods	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. What is the proportion of time occupied by teachers' one-way theoretical lectures in your class?	1	1	0	1	1	0.8
2. Is your practical training class mainly based on teacher demonstration and student imitation, lacking students' independent exploration?	1	0	1	0	1	0.6
3. Do you often use teaching methods such as case teaching, situational simulation, and role-playing in daily teaching?	0	1	0	1	1	0.6
4. Does your teaching involve real business scenarios?	1	0	1	1	1	0.8

III. Teaching Methods	Expert opinion					IOC
	E1	E2	E3	E4	E5	
5. Do you integrate the requirements of accounting skill competitions into daily teaching?	0	1	1	1	0	0.6
6. Do you adopt school-enterprise collaborative teaching?	1	1	0	0	1	0.6

IV. Teaching Tools	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Do you use accounting practical training software and virtual simulation platforms in teaching?	1	1	-1	1	1	0.6
2. When using the "smart teaching platform", does it cover "pre-class preview - in-class interaction - post-class consolidation"?	1	0	1	0	1	0.6
3. Do you use the integrated platform for learning, practice, training, and competition in teaching?	1	1	0	1	1	0.8
4. Do the cases in your practical training software cover accounting treatment for new business formats such as e-commerce and live streaming?	1	1	1	1	1	1
5. Do you use special accounting tools in teaching?	0	1	1	1	0	0.6

V.Teaching Process	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1.What is the proportion of "practical teaching hours" in the total teaching hours of your course?	1	1	0	0	1	0.6
2. Is your practical teaching mainly based on simulated operations, lacking contact with real business?	1	0	1	0	1	0.6
3. Are the off-campus practical training opportunities sufficient for accounting majors in your college?	1	1	0	1	1	0.8
4.Does your on-campus practical training cover multi-post collaboration (such as collaboration between cashiers, accountants, and supervisors) instead of single software operation?	1	1	1	1	1	1
5. Do you push targeted pre-class preview resources?	1	1	0	0	1	0.6
6.Do you organize interactive analysis (such as group discussion and case analysis) for key and difficult teaching points in class?	1	0	1	0	1	0.6
7.Do you provide personalized guidance based on students' learning data after class?	1	1	0	1	1	0.8
8.Do you design a coherent teaching process based on accounting post tasks?	0	1	1	1	0	0.6
9.Can you proficiently guide students to solve practical business problems of enterprises?	1	0	1	0	1	0.6

VI. Teaching Evaluation	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1.What is the proportion of summative evaluation (final examination) in the total course score?	1	1	1	1	1	1
2. Does your teaching evaluation include the assessment of practical operation ability?	1	0	1	0	1	0.6
3. Does your teaching evaluation include the dimension of professional literacy (such as teamwork and professional ethics)?	1	1	0	1	1	0.8
4. Does your evaluation content align with the examination points of professional qualification certificates and the needs of enterprise posts?	1	1	1	1	1	1
5. Do you use learning data from information-based platforms for evaluation?	1	1	0	0	1	0.6
6.Do you adjust teaching strategies in a timely manner based on evaluation results?	1	0	1	0	1	0.6
7.Which subjects are included in your teaching evaluation? (Multiple choices allowed)	0	1	0	1	1	0.6

Appendix D2: The results of experts' evaluation of “Questionnaire for Testing the Teaching Quality of the Modern Teaching Model for Accounting Courses in Vocational and Technical Colleges of Yunnan Province”

Experts scored each item of the questionnaire using the IOC (Item Objective Congruence) method, with the assessment focusing on "the relevance between items and measurement objectives". In this table, E1 to E5 correspond to the evaluation results of the five experts in sequence. The specific scoring criteria are as follows: 1 point (the item is highly relevant to the measurement objective), 0 points (moderately relevant), and -1 point (not relevant).

I. Teaching Objectives	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Does your teaching objective clearly cover the core skills of accounting positions (such as cash register, accounting, taxation and other position skills)?	1	1	0	0	1	0.6
2. Does your teaching objective integrate the "curriculum-certificate-competition" integration requirements (such as 1+X certificate, accounting skills competition standards)?	1	0	1	0	1	0.6
3. Does your teaching objective match the actual position needs of local enterprises in Yunnan Province (such as small and micro enterprises, agency accounting companies)?	0	1	0	1	1	0.6

II. Teaching Content	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Is your teaching content integrated according to the "post work process", with no repetition and clear logic?	1	1	0	0	1	0.6
2. Is your teaching content updated every year, covering knowledge of new business formats such as green cost accounting under the background of "double carbon" and cross-border accounting under the RCEP framework?	1	0	1	0	1	0.6
3. Is your teaching content designed with practical projects combined with specific work tasks of accounting positions?	1	1	0	1	1	0.8

III. Teaching Methods	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Do you use situational interaction methods (such as role-playing of positions, real business case analysis) in your teaching?	1	1	0	0	1	0.6
2. Do you adopt the project-driven teaching method and organize students to participate in real business projects jointly guided by "in-school teachers + enterprise tutors"?	1	1	0	1	0	0.6
3. Is the proportion of time for teachers to give one-way theoretical lectures in your class less than 50%, with emphasis on increasing student interaction?	1	0	1	0	1	0.6
4. Do you integrate the requirements of accounting	1	1	0	1	1	0.8

III. Teaching Methods	Expert opinion					IOC
	E1	E2	E3	E4	E5	
skills competitions into daily teaching and carry out "software operation + virtual scenario" competition activities?						

IV. Teaching Tools	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. Do you often use intelligent digital training tools (such as UFIDA U8, Kingdee KIS, Python financial analysis library, etc.) in your teaching?	1	1	1	1	1	1
2. Do you use intelligent teaching platforms (such as Rain Classroom, Chaoxing Learning Platform) to achieve full-process coverage of "pre-class preview - in-class interaction - post-class consolidation"?	1	1	0	1	0	0.6
3. Do the cases in your training software cover the accounting treatment of new business formats such as e-commerce and live streaming?	1	0	1	0	1	0.6

V. Teaching Process	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1. What is the approximate proportion of practical teaching hours in the total teaching hours of your course?	0	1	1	1	0	0.6
2. Has your teaching process formed a closed loop of "pushing preview resources before class - interactive practical operation in class - strengthening projects	1	1	0	1	0	0.6

V. Teaching Process	Expert opinion					IOC
	E1	E2	E3	E4	E5	
after class"?						
3. Do you carry out practical teaching relying on "in-school accounting studio + off-campus enterprise training base" to enable students to contact real business?	0	1	1	0	1	0.6

VI. Teaching Evaluation	Expert opinion					IOC
	E1	E2	E3	E4	E5	
1.What is the approximate proportion of summative evaluation (final exam) in the total score of your course?	1	1	1	1	0	0.8
2.Do you use learning data from information platforms (such as micro-course duration, answer accuracy rate) to carry out process-oriented evaluation and generate students' learning reports monthly?	0	1	1	1	0	0.6
3. Is the assessment of professional literacy (such as teamwork, financial integrity, confidentiality awareness) included in your teaching evaluation?	1	0	1	0	1	0.6

Appendix E

Certificate of English



This is to certify that

XU YIRONG

Achieved BSRU English Proficiency Test (BSRU-TEP) level

C2

Given on 13th December 2025

A blue ink signature is written over the name of the Assistant Professor. The signature is stylized and appears to be 'K. Aphiratvoradej'.

Assistant Professor Dr Kulsirin Aphiratvoradej

Director

Appendix F

The Document for Acceptance Research



ที่ อว ๐๖๑๖.๐๖/๐๓๘๙

คณะครุศาสตร์
มหาวิทยาลัยราชภัฏนครสวรรค์
อ.พยุหะคีรี จ.นครสวรรค์ ๖๐๑๓๐

๒๙ มีนาคม ๒๕๖๙

เรื่อง ตอบรับการตีพิมพ์บทความ

เรียน คุณ Xu Yirong , คุณPrapai Sridama , คุณPong Horadal และคุณKanakorn Sawangcharoen

ตามที่ท่านได้ส่งบทความเรื่อง "Teaching Model for Accounting Courses in Vocational and Technical Colleges in Yunnan Province" เพื่อตีพิมพ์ในวารสารการบริหารการศึกษาและนวัตกรรมการศึกษา คณะครุศาสตร์ มหาวิทยาลัยราชภัฏนครสวรรค์ นั้น

บัดนี้กองบรรณาธิการวารสารการบริหารการศึกษาและนวัตกรรมการศึกษา ได้ส่งให้ผู้ประเมินอิสระตรวจอ่านบทความ (Peer Reviewer) จำนวน ๓ ท่านแล้ว ซึ่งเห็นว่าบทความงานวิจัยดังกล่าวมีรูปแบบและเนื้อหาเหมาะสม มีคุณค่าต่อการตีพิมพ์เผยแพร่เพื่อประโยชน์ทางวิชาการในวารสารการบริหารการศึกษาและนวัตกรรมการศึกษา คณะครุศาสตร์ มหาวิทยาลัยราชภัฏนครสวรรค์ ปีที่ ๖ ฉบับที่ ๓ ประจำเดือน กันยายน – ธันวาคม ๒๕๖๙ (ISSN: ๒๕๒๒-๐๐๕๖) ซึ่งได้รับการรับรองคุณภาพจากศูนย์ดัชนีการอ้างอิงวารสารไทย (Thai Journal Citation Index Centre) ให้อยู่ในวารสารกลุ่มที่ ๒ ตั้งแต่วันที่ ๑ มกราคม ๒๕๖๘ จนถึง ๓๑ ธันวาคม ๒๕๖๒

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

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