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# *Design and Research of Dynamic Matching Precision Teaching Model in Professional Basic Courses*

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***Abstract:*** In order to enhance the teaching efficacy of professional foundational courses, a precision teaching mode has been developed, which based on dynamically aligns students' learning characteristics with teaching resources. This teaching mode was implemented among the students of the class of 2022, using the course "Principle of Automatic Control" as its practical application. Empirical outcomes indicate that the teaching model effectively ensures teaching effectiveness. To further optimize the implementation of this mode, this paper proposes additional implementation suggestions, including strengthening resource aggregation, establishing a platform for the co-construction and sharing of teaching resources, and refining learning needs to cater to personalized learning requirements.

## 1. Introduction

In 2019, the "Modernization of China's Education 2035" released by the Central Committee of the Communist Party of China and the State Council, states that [1], "accelerate the reform of education in the information age, utilize modern technology to expedite the reform of talent training modes, and achieve the organic integration of large-scale education with personalized training". Focusing on the prominent issues of the traditional centralized classroom education mode and personalized education needs in the current education development, exploring the innovative teaching mode for talent training in the context of information technology-enabled education development to enhance the teaching quality is the focal point of the current education and teaching reform[2].

The professional basic course is established in institutions of higher learning and secondary professional schools to lay the essential groundwork for specialized studies. It is a pivotal course for students to acquire professional knowledge and skills. The student body exhibits several distinct characteristics: Firstly, they encompass a vast number of learners. The audience for these courses includes all students majoring in the field, and most classes are conducted in large groups, sometimes with nearly 100 students per class; Secondly, there is a diversity of individual needs. Each student has a unique developmental journey and learning profile, including varying levels of foundational knowledge, interests, and preferences. Moreover, within the same classroom, there exists a variety of learning styles; Thirdly, there are differing learning biases. Given the individual needs, students have significant variations in their preferred teaching and learning methods during the educational process. The instructors of professional basic courses (teachers) also possess certain characteristics: Firstly, their energy is finite. Under the traditional centralized classroom teaching model, it is challenging for a single teacher to cater to the personalized teaching needs of all students in the same class; Secondly, targeted instruction is insufficient. The teaching methodologies adopted by instructors are primarily from the perspective of fulfilling teaching requirements and needs, and often lack alignment with students' learning preferences.

The teaching characteristics of the aforementioned professional basic courses present a core challenge: under the constraints of limited teacher resources and energy, how can educators devise a rational teaching approach that caters to the diverse learning preferences, styles, and individualized needs of students within a centralized teaching framework? This question is pivotal for advancing educational reform and enhancing the quality of instruction.[3]

The marginal contribution of this paper is primarily evident in two key areas: First, it establishes a comprehensive student learning needs model for the teaching class, grounded in a profound comprehension of the diverse differences among students, and informed by data on their learning styles and interest preferences. Secondly, it constructs a classroom fuzzy evaluation system leveraging modern information technologies, such as online teaching platforms, to realize a precise teaching mode with dynamic matching capabilities, which has been applied in practice. This paper delves into the reform of teaching methodologies from both theoretical and empirical perspectives, thereby fostering the innovative development of professional foundational course instruction.

## 2. The Theory of Precision Teaching

The essence of precision teaching centers on three key aspects: precision in objectives, precision in methods, and precision in interventions. From a pedagogical standpoint, objective precision is grounded in student needs, clearly defining teaching objectives, and the aim is to establish a comprehensive teaching objective (demand) model within a large-scale teaching approach, tailored to the individual needs of students; method precision involves the capacity to develop a scientific teaching structure, appropriate teaching methodologies, detailed teaching procedures, and corresponding teaching methods for the comprehensive teaching objective model, with the goal of achieving excellent teaching outcomes; accurate intervention refers to the dynamic enhancement and adjustment of the teaching approach based on student feedback or teaching evaluations, thereby facilitating teaching and learning. The dynamic matching precision teaching model embodies the teaching philosophy of being "student-centered, outcome-oriented, and continuously improving."[4,5].

The precise teaching mode of dynamic matching for professional basic courses, as discussed in this paper, concentrates on constructing a model of the overall teaching objectives (demands) based on students' personalized learning needs. It selects core elements such as learning foundation, learning style, and learning preference as parameters for the object model. By matching corresponding teaching methods and modes, as well as the content, the aim is to enhance the relevance and adaptability of instruction, thereby improving teaching quality.

## 3. The Framework of Dynamic Matching in Precision Teaching Mode

The dynamic matching precision teaching mode primarily concentrates on three key areas: target accuracy, problem precision, and intervention precision[6].The framework of dynamic matching and precise teaching mode primarily consists of four components: The first component is the characteristic model of the overall teaching object. Its main purpose is to analyze the primary learning styles, preferences, and other characteristics of all students within the context of large-scale teaching, thereby assisting teachers in selecting appropriate teaching methods and modes. The second component involves teaching methods that align with the teaching characteristics. These methods are primarily determined based on the teaching experience of educators, focusing on the aspects of knowledge content, teaching methodologies, and instructional approaches. The third component is the students' classroom evaluation, which mainly encompasses real-time evaluation and feedback from the perspectives of teaching methods, content, outcomes, and classroom dynamics. The fourth component entails the dynamic adjustment of the teaching mode, which involves dynamically modifying the existing teaching mode for students based on their classroom evaluations, while also considering the individualized learning needs of the students.

This paper focuses on a university institute's electrical engineering and automation department, specifically targeting the teaching of the fundamental course "Automatic Control Principles." The course is offered in the fifth semester, spans a total of 48 hours, and is characterized by its knowledge-intensive, abstract content, and theoretical nature. Students often find it to be a dull subject, resulting in poor teaching outcomes. Consequently, the implementation of a dynamic matching precise teaching mode in the "Automatic Control Principles" course is proposed to enhance teaching quality and reinforce the effectiveness of instruction.

### 3.1 The Characteristic Model of the Overall Teaching Object

The learning style, learning preference, and learning basis were ascertained through data inquiry and questionnaire. Specifically, the method of data inquiry was employed to obtain the results for the "Signal System Basis" course of students' leading major; questionnaires were utilized to explore students' learning styles, preferences, and the core elements of their learning foundation; and principal component analysis was applied to determine the learning characteristics of the class.

Firstly, research into the students' learning styles. The learning style represents students' long-term learning strategies and tendencies[7]. It has been categorized into four types: aggregated, divergent, assimilative, and regulatory, as illustrated in Table 1. Establishing teaching methods that align with these learning styles is fundamental to accurate instruction.

Table 1: Types of Learning Styles and Their Corresponding Learning Behavior Tendencies

| **Learning Style Type** | **Polymerization Type** | **Divergent Type** | **Assimilation Type** | **Regulating Type** |
|---|---|---|---|---|
| **Learning Behavior Tendency** | Good at discovering the practical value of the theory, and able to effectively solve practical problems, like text-based learning resources. | Be good at finding problem solutions from a variety of viewpoints, and like learning resources like pictures, tables and animation | Be interested in theory and abstract concepts, need explanatory explanations, like audio and video learning resources. | Good at hands-on, learning through experience, like simulation operation, practical learning resources |

Secondly, to investigate students' learning preferences. Learning preference primarily measures students' inclinations towards various knowledge teaching methods, serving as a crucial reference for teachers to tailor their instruction. It focuses on exploring students' favored teaching approaches, encompassing courseware teaching, video demonstration, pictorial explanation, animation-based instruction, case analysis, and hands-on practice.

Thirdly, the investigation focuses on the students' learning foundation. This foundation is primarily gauged by their proficiency in core subjects, which serves as a critical foundation for teachers to tailor their instruction precisely. The basis of learning primarily encompasses two dimensions: one is the students' performance in their core subjects; the other is their command of the core subject knowledge content.

Finally, the overall learning characteristics of the students are determined. Each student possesses unique learning characteristics, and it is challenging to identify a single learning style or preference for any one student. Consequently, identifying the collective learning characteristics of the class is an effective approach, which involves implementing precision teaching within a large-scale instructional framework.

### 3.2 Teaching Methods that Match the Characteristics of the Teaching Objects

The teaching mode is characterized by the unique approach developed by teachers, drawing upon their accumulated knowledge of the curriculum, teaching experience, and pedagogical expertise.[8] The choice of teaching methods should be grounded in the primary attributes of the subject matter, while also integrating the individual teaching experiences of educators. This selection process should align with the training objectives and curriculum requirements, ensuring a precise and scientific match with the students' learning needs. The process of selecting teaching methods involves three key aspects:

1). Knowledge Evaluation: This primarily involves teachers' assessment of knowledge resources based on the breadth and depth of the content, in conjunction with extensive teaching experience and students' historical learning. The evaluation encompasses the degree of acceptance, importance, and interrelatedness of the knowledge content. Teachers then align this evaluation with the determination of appropriate teaching content.

2). Knowledge Representation: Knowledge representation encompasses two main aspects: the first is the content attributes of knowledge points, such as whether the content is abstract, whether teaching resources are plentiful, and whether it can be verified through experiments; the second is the interconnection of knowledge, including the linkage between knowledge points, whether the explanatory structure adheres to a progression from the simple to the complex, and whether the sequence is logically arranged. Teachers tailor their teaching to students' learning styles based on the representation of the content being taught.

3). Knowledge Expression: Knowledge expression refers to the methods by which knowledge resources are presented during the course of teaching, such as text, video, images, case studies, etc. Knowledge resources typically have multiple modes of expression (e.g., text + video). It is a crucial aspect of curriculum design and precise teaching for teachers to match students' learning preferences with existing forms of knowledge expression.

### 3.3 Real-time feedback of the Classroom Teaching Evaluation

Accurate matching of the teaching mode is a dynamically adjusted teaching process. At the outset of the course, teachers select appropriate teaching content and methods in accordance with the students' characteristics. As the course progresses and students' needs evolve, the teaching content and methods should be promptly adjusted, primarily based on real-time feedback from the students.[9]

Unlike course evaluation, classroom teaching evaluation necessitates real-time performance and ease of use. The evaluation system primarily encompasses the following components: firstly, a scientific and reasonable classroom teaching quality evaluation index system. The evaluation of classroom teaching quality reflects teachers' design and arrangement of teaching plans, as well as the information feedback on students' teaching modes, with self-learning needs as the focal point. The genuine feedback on teaching dynamics is crucial to the success or failure of classroom teaching quality evaluation. Secondly, it involves determining the calculation method for the quality evaluation index, which combines qualitative and quantitative approaches in students' course evaluations. The evaluation system possesses a certain word processing capability and can reasonably calculate the evaluation index. Thirdly, the platform for real-time information feedback significantly enhances the immediacy and interactivity of the classroom, facilitates efficient classroom teaching, and provides a reference basis for the rational adjustment of teachers' classroom teaching plans.

### 3.4 Dynamic Adjustment of Accurate Teaching Methods

The dynamic adjustment of teaching mode primarily hinges on the rational re-planning of both content and methodology, based on the feedback from classroom teaching evaluations. To maintain the continuity of the course, this study compiled and adjusted the classroom evaluation content for each chapter. The adjustments encompass three main areas: firstly, the teaching methodology. As students' understanding and cognition of the course evolve, the study summarizes individual learning needs and modifies certain teaching methods, such as video, case study, and animated instruction. In response to shifts in students' needs and learning statuses, more appropriate approaches are chosen to be integrated into the teaching process, including teacher-student group discussions, task-oriented learning, and on-site instruction, to enhance teaching quality. Secondly, the evaluation and enhancement of teaching content focus on synthesizing students' feedback regarding the theoretical and practical integration, as well as the practical operability of the content. Teachers should then adjust the teaching content or corresponding resources based on their teaching experience.

## 4. Analysis of the Implementation Effect of Dynamic Matching Precision Teaching Mode

Taking 62 students majoring in Electrical Engineering and Automation from the class of 2022 at a university in Hebei Province as the research subjects, the course "Automatic Control Principles" is selected as a case study to analyze and evaluate the implementation process and outcomes of an accurate teaching methodology. In this study, questionnaires and data queries are employed to gather insights into students' learning styles, preferences, and foundational knowledge. For each student, specific items are scored on a scale from 100 to 0 points, reflecting their individual circumstances.

### 4.1 Student Characteristics Description and Teaching Implementation

The survey data regarding students' learning styles and preferences are shown in Tables 2 and 3, respectively.

Table 2: Student learning style descriptive information statistics

| Variable Name | Average Value | Standard Deviation | Variance | Kurtosis | Heteromorphosis coefficient |
|---|---|---|---|---|---|
| **Polymerization Type** | 76.726 | 18.221 | 332.006 | 4.558 | 0.24 |

| | | | | | |
|---|---|---|---|---|---|
| **Divergent Type** | 80.758 | 18.232 | 332.416 | 11.11 | 0.23 |
| **Assimilation Type** | 75.419 | 21.436 | 459.493 | 2.619 | 0.28 |
| **Regulating Type** | 83.565 | 12.581 | 158.283 | 0.662 | 0.15 |

In terms of students' foundational learning, the outcomes of the leading course were ascertained via inquiry. A total of 47 students scored over 80 points, constituting 75.8% of the cohort. The majority of students demonstrated a solid knowledge base. This knowledge was assessed through a survey questionnaire, with the following areas showing proficiency: time-domain analysis of continuous time systems (32.81%), Fourier transform and frequency domain analysis of systems (28.12%), and s-domain analysis of continuous systems (28.12%).

Table 3: Descriptive Statistics of Students' learning Preferences

| Variable Name | Average Value | Standard Deviation | Variance | Kurtosis | Coefficient Of Variation |
|---|---|---|---|---|---|
| Courseware Teaching | 82.516 | 20.177 | 407.111 | 3.711 | 0.24 |
| Video Demonstrations | 70.422 | 32.019 | 1025.2 | 0.485 | 0.45 |
| Picture Explanations | 92.828 | 105.255 | 9178.557 | 57.272 | 1.13 |
| Animation Teaching | 81.203 | 23.935 | 572.895 | 4.185 | 0.29 |
| Case Analysis | 88.516 | 16.512 | 272.635 | 12.67 | 0.19 |
| Practical Exercises | 101.422 | 77.307 | 5976.375 | 61.733 | 0.76 |

Based on the analysis of the questionnaire survey data, students' learning style and preferences emerge as a composite of various elements. To assist teachers in aligning with appropriate teaching strategies, the principal component analysis method is employed to identify the predominant learning styles and preferences among all students. Variance analysis is then used to ascertain the contribution of interpretive factors, while component loading analysis highlights the significance of latent variables. Dimensional analysis is conducted according to the component loading coefficients, ultimately determining the primary learning styles and preferences. The weights of the main elements of the learning style are presented in Table 4.

Table 4: The Weight of the Main Elements of Learning Styles

| Factor Loading Coefficient Table | | |
|---|---|---|
| Variable Name | Factor Loading Factor | Common Degree (Common Factor Variance) |
| | Main Element | |
| **Polymerization Type** | 0.043 | 0.002 |
| **Divergent type** | 0.839 | 0.704 |
| **Assimilation Type** | 0.823 | 0.677 |
| **Regulating Type** | 0.482 | 0.232 |

As indicated in Table 4, the load coefficient for the Divergent factor is 0.839, and the coefficient for Assimilation is 0.823, both significantly higher than the other two types. Therefore, the primary class learning style can be determined by two parameters: Divergent and Assimilation. Most students in the class excel at using observational methods and require supplementary explanatory materials, such as animations, charts, and video teaching resources.

Table 5: The Weight of Learning Preference Principal Elements

| Factor Loading Coefficient Table | | |
|---|---|---|
| Variable Name | Factor Loading Factor | Common Degree (Common Factor Variance) |
| | Main Element | |
| Courseware Teaching | 0.417 | 0.174 |
| Video Demonstrations | 0.843 | 0.711 |
| Picture Explanations | 0.331 | 0.11 |
| Animation Teaching | 0.886 | 0.786 |
| Case Analysis | 0.781 | 0.611 |
| Practical Exercises | -0.151 | 0.023 |

The primary emphasis of learning preferences, as indicated in Table 5, reveals that the factor for video demonstration is 0.843, the coefficient for animation teaching is 0.886, and the coefficient for case analysis is 0.781, all significantly higher than the other three types. Consequently, the predominant classroom learning preferences can be identified as animation teaching, video demonstration, and case analysis, aligning with the class subject learning style.

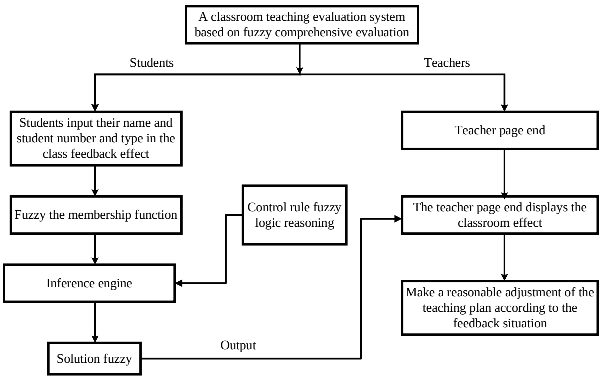
## 4.2 Design of Classroom Teaching Quality Evaluation System

The classroom evaluation concentrates on various aspects including teaching attitude, methods, content, effectiveness, and classroom scenarios, with specific evaluation indicators detailed in Table 6.

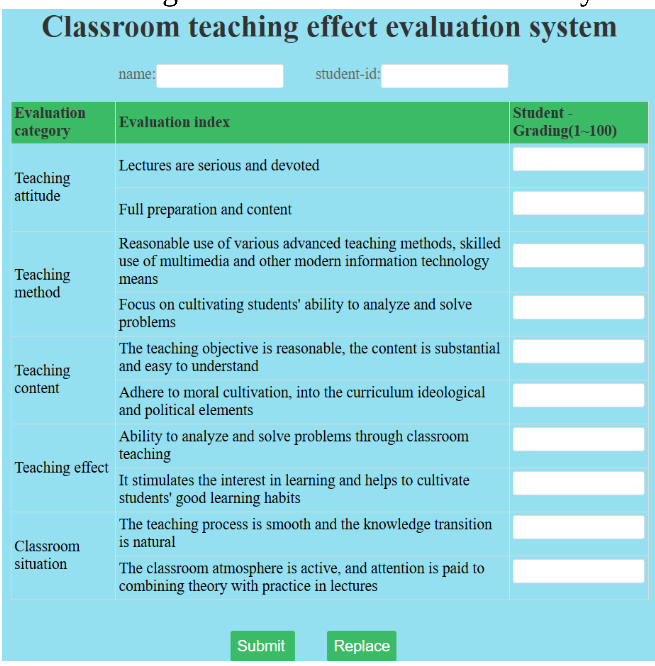
Table 6: Evaluation System of Classroom Teaching Quality

| **First-class Index** | **Secondary Index** |
|---|---|
| Teaching Attitude | Teaching is earnest and devoted. |
| | Prepare lessons adequately and with rich contents. |
| teaching Method | Reasonable use of advanced teaching methods, skilled use of multimedia, and other information technology resources. |
| | Focus on cultivating students' ability to analyze and solve problems. |
| Content Of Courses | The teaching goal is reasonable, the content is substantial and easy to understand. |
| | Adhere to moral education and cultivate people, incorporate ideological and political elements into the curriculum. |
| Teaching Effect | Enhance the ability to analyze and solve problems through classroom instruction. |
| | Encourage students to develop an interest in learning and promote the formation of good study habits. |
| Classroom Situation | The teaching process is seamless, and knowledge is transferred naturally. |
| | The classroom atmosphere is dynamic, focusing on integrating theory with practice in lectures. |

The classroom evaluation method employs a scoring system, where students assess the teaching content and the effectiveness of classroom implementation based on evaluation criteria. Their scores are then aggregated and computed using a fuzzy comprehensive evaluation algorithm. The evaluation system's development utilizes Python technology, enabling students to conduct evaluations via mobile phones, while teachers can display the results in real-time through the page backend. The block diagram and design interface of the classroom evaluation system are depicted in figures 1a and 1b, respectively.




a. Block Diagram of Classroom Evaluation System




b. Design Interface of Classroom Evaluation System

Figure 1: Structure Block Diagram and Design Interface of Classroom Evaluation System

### 4.3 Dynamic Adjustment of Teaching Methods

The dynamic adjustment of teaching methods primarily hinges on students' preview and comprehension of the subject matter, as well as their subjective assessment of the course content based on their unique learning traits. Teachers synthesize and analyze feedback from students, and in light of the course objectives and their own teaching expertise, they promptly adapt the curriculum, pedagogical approaches, and educational resources.

1) The adaptation of teaching content predominantly occurs in the pre-class knowledge transfer phase. During this phase, teachers utilize the information platform to disseminate preview content resources, and students, drawing upon their preview and understanding of the material, make subjective evaluations of the course content in light of their learning characteristics and the effectiveness of their preview. The students' evaluation of the teaching content is detailed in Table 7. From the feedback provided by students on the teaching content, it is evident that the foundational

concepts and mathematical models within the course can be mastered through self-study, allowing teachers to provide brief explanations; whereas abstract knowledge, such as time domain analysis and frequency domain analysis, benefits from a blend of theoretical instruction and practical teaching methods.

Table 7: Teaching Content, Student Evaluation Information

| Course Contents | Theoretical | Combination Of Theory and Practice | Practical Teaching | Online Self-study |
|---|---|---|---|---|
| General Concepts Of Automatic Control | 26 | 21 | 14 | 46 |
| Mathematical Models Of Control System | 25 | 24 | 27 | 32 |
| Time Domain Analysis Of Linear Systems | 31 | 33 | 31 | 18 |
| Root Locus Method For Linear Systems | 34 | 34 | 33 | 21 |
| Frequency Domain Analysis Of Linear Systems | 37 | 21 | 29 | 15 |
| Correction Method Of Linear Systems | 15 | 26 | 23 | 21 |

2) The adjustment of teaching methods primarily occurs during the process of knowledge construction in the classroom. This process is grounded in the foundation of pre-class knowledge transmission, where teachers choose appropriate teaching methods in accordance with the characteristics of the teaching content. They then assess the feedback from students on these methods through classroom evaluations, as depicted in Figure 2. Based on the students' feedback, methods such as PPT teaching and on-site teaching are deemed more suitable for the content explanation of this course and the learning needs of the students.

3) The allocation of teaching resources primarily occurs through the consolidation of knowledge outside of class hours. The course on Automatic Control principles is highly theoretical, with content that is abstract in nature. After class, it is a crucial phase to further solidify knowledge. Teachers recommend suitable online courses for students to reinforce their learning based on the content covered. The choice of learning resources is a key element that influences the effectiveness of learning consolidation. Through online discussions, teachers aggregate students' feedback on the teaching materials, as depicted in Figure 3.As evidenced by Figure 3, students exhibit a significant interest in case-based teaching and practical teaching resources, which can effectively reinforce the knowledge content and aligns with the distinctive features of this course.

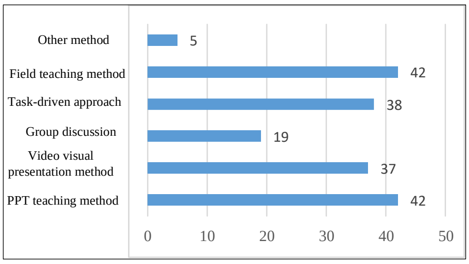



Figure 2: Summary of Students' feedback On Teaching Methods

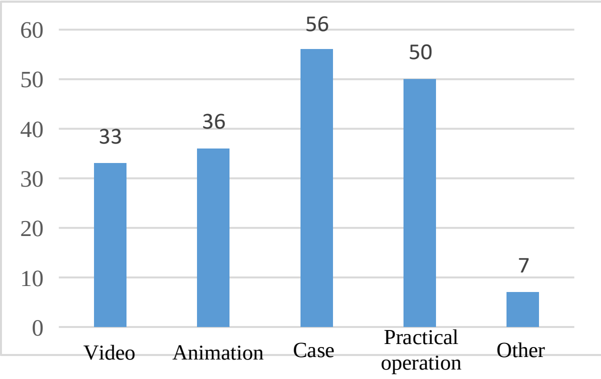



Figure 3: Information Summary of Students' evaluation Of Teaching Resources

### 4.4 Analysis of teaching effect

Using the method of examination paper assessment, the scores for each chapter are allocated based on the data statistics from the teaching process, and the effectiveness of the dynamic matching precision teaching mode is illustrated in Table 8. The overall score rate stands at 78.2%, while the score rate for calculation questions is relatively low at 69.4%, primarily due to the need for improvement in students' ability to solve practical problems. From the perspective of course content mastery, the linear system root trajectory method in Chapter 4 and the frequency domain analysis method in Chapter 5 present challenges due to their strong theoretical and abstract nature, leading to a general level of student understanding. These areas are also identified as key areas for further refinement of the precision teaching mode, alongside other teaching content.

The assessment results indicate that the overall teaching effectiveness of this mode is positive. By leveraging the classroom evaluation system, dynamic interaction between teachers and students is achieved, enabling closed-loop management of the teaching process and dynamically adjusting teaching content and methods to better cater to students' personalized learning needs. Regarding the situation where the total score is not exceptionally high, the author analyzes the large-scale teaching mode and employs the principal component analysis method to obtain the learning characteristics of all students, constructing a teaching model for the entire student body. However, there is a certain deviation, and the personalized needs of a few students cannot be fully addressed and met.

Table 8: Course Assessment Analysis Table

| | Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Value | Score | Scoring Average |
|---|---|---|---|---|---|---|---|---|---|
| Multiple Choice | 6 | 6 | 2 | 2 | 2 | 2 | 20 | 16 | 80.00% |
| True or False Questions | 0 | 2 | 6 | 2 | 0 | 0 | 10 | 8.9 | 89.20% |
| Multiple-choice Questions | 6 | 3 | 0 | 0 | 3 | 3 | 15 | 12.8 | 85.33% |
| Short Answer Questions | 4 | 4 | 4 | 0 | 0 | 0 | 12 | 10.7 | 89.50% |
| Computational Problems | 0 | 9 | 14 | 10 | 10 | 0 | 43 | 29.8 | 69.30% |
| Chapter Summary | 16 | 24 | 26 | 14 | 15 | 5 | 100 | 78.2 | 78.20% |
| Chapter Score | 15.3 | 19.2 | 20.1 | 8.9 | 10.2 | 4.4 | 78.2 | | |
| Chapter Score Rate | 95.8% | 80.1% | 77.5% | 63.4% | 68.3% | 88.5% | | | |

## 5. Practical Conclusions and Suggestions

This study, in accordance with the teaching characteristics of professional foundational courses, constructs a dynamic matching precision teaching model. Through the main element analysis method, it builds a centralized teaching object model, targeting precise teaching activity design, implementation, and evaluation. The research focuses on university-level 20 electrical engineering and automation professional students, using the principle of automatic control course as the research vehicle, to discuss the impact of the dynamic matching precision teaching model on professional foundational teaching effectiveness. Analysis of the assessment results indicates that the teaching model can meet the course's teaching requirements, and students demonstrate good learning outcomes.

To further implement the dynamic matching precision teaching model for professional foundational courses, the paper proposes the following suggestions:

(1) Strengthening the application of information technology is helpful to improve the multi-closed-loop management of the teaching process. In the pre-class preview, classroom teaching, homework and other links, teachers should constantly improve the application of information technology. Teaching auxiliary technology can realize the summary and classification of feedback information, and put forward preliminary decision-making suggestions, assist teachers in teaching, and reduce teachers' workload and work pressure.

(2) Schools should strengthen resource collection and establish a platform for jointly building and sharing teaching resources between teachers and students. We leverage the benefits of diverse resources in the information society, establish a comprehensive teaching resource database, and motivate educators and learners to continuously gather, adapt, and refine teaching materials and resources.

(3) Refined learning is essential to cater to individualized educational requirements. It is imperative to further advance the utilization of supplementary teaching technologies, enabling educators to proactively comprehend the unique traits of their students. This approach enhances the alignment between pedagogical methodologies and students' characteristics, thereby boosting students' interest and enthusiasm for learning. Educators should tailor the curriculum and instructional strategies, progressively establishing a differentiated, multi-tiered teaching framework to satisfy diverse teaching needs and enhance instructional outcomes.

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