

Exploration on The Trinity Comprehensive Evaluation Model of Electromagnetic Field and Microwave Technology Course

Han Zhenhua

College of Physics and Electronic Engineering
Xinjiang Normal University
Urumqi, Xinjiang, 830054, China

Hong Doudou

College of Physics and Electronic Engineering
Xinjiang Normal University
Urumqi, Xinjiang, 830054, China

Abstract: With the deepening of education reform, the traditional teaching evaluation model in colleges and universities is no longer suitable for the development of the current era. For the majors of electronic science and technology and communication engineering, electromagnetic field and microwave technology are the two most important courses, and they are also important teaching contents to ensure the work effect of students after graduation, which is of great significance to the future development of students. In traditional teaching, the evaluation method of courses mainly adopts summative evaluation. The three-in-one comprehensive evaluation model combines formative evaluation and summative evaluation, and integrates the three evaluation elements of learning ability, practical ability, and comprehensive ability. Diversified evaluation model.

Keywords: Electromagnetic Fields, Microwave Technology Course, Trinity Comprehensive, Exploring Evaluation Modes

1. INTRODUCTION

In order to fully implement the "Opinions on Strengthening and Improving Ideological and Political Work in Colleges and Universities under the New Situation" issued by the Central Committee of the Communist Party of China and the State Council, fully explore and utilize the ideological and political education resources contained in various disciplines [1]. The electromagnetic field and microwave technology course is an important professional basic course for electronic information engineering, communication engineering and other majors. The electromagnetic field and microwave technology course is one of the important pillar courses of electronic science and technology and communication engineering [2]. To continuously improve the course teaching, improve the level of course construction and teaching quality. The electromagnetic field and microwave technology teaching courses have an important impact on the future development of students majoring in electronic science and technology and communication. Mastering these two courses can help students better integrate their knowledge and promote their future development. In addition, with the help of summative evaluation model of influence [3].

The so-called "three-in-one" comprehensive evaluation is an evaluation system for college admissions and selection that includes three components: high school academic level test, comprehensive quality evaluation and unified college entrance examination [4]. To improve the management methods of classroom teaching in colleges and universities, to implement the fundamental task of moral education, to focus on cultivating college students to strengthen their ideals and beliefs, cultivate family and country feelings, strengthen moral cultivation [5], and strengthen the integration and penetration of moral education content and subject professional courses. The electromagnetic field and microwave technology courses are rich in content, mainly including nine parts, as shown in Figure 1. Each part of the content is closely linked, layer by layer. Reforms have been

made in the curriculum evaluation model of electromagnetic fields and microwave courses [6].

Aiming at the disadvantages of the traditional evaluation model mainly based on summative evaluation, the inertial influence of the summative evaluation model should be used [7]. For the three-in-one comprehensive evaluation model, it is a combination of formative evaluation and summative evaluation. Comprehensive evaluation method, which integrates the three aspects of learning ability, practical ability, and comprehensive ability to form a diversified evaluation method [8], some colleges and universities have also adjusted the proportion of the three according to actual experience. For example, in 2013, Wenzhou Medical College adjusted the proportions of the three [9], that is, "replaced" the proportions of high school academic proficiency test scores and comprehensive quality evaluation scores. Multi-application-oriented undergraduate colleges and universities start from the perspective of "course ideology and politics" and focus on exploring new ideas and new measures for "first-class undergraduate major construction and course ideological and political teaching" [10].

Do in-depth research starts with the teaching of Maxwell's equations, and then sequentially teaches boundary conditions, Poynting's theorem, wave equation, and time-harmonic electromagnetic fields. Through the study of this chapter, it lays a foundation for the study of plane electromagnetic waves in the next chapter [11]. Chapter 4 begins with the wave equation. Improve the content and form of evaluation, eliminate the negative impact of the current evaluation model, and achieve in-depth and comprehensive evaluation of students [12]. The practical ability evaluation in the experimental teaching and the comprehensive evaluation content in the final examination of students are integrated to form the course evaluation results of three content structures. Compared with the independent enrollment of Zhejiang Province, Zhejiang Province's "Trinity" comprehensive

evaluation of independent enrollment can be described as unique [13].

From the perspective of teaching and educating people, integrating ideological and political work into the teaching process must focus on students, take care of students, serve students, guide students [14], and continuously improve students' ideological level, political Consciousness, moral character. On this basis, the polarization of plane waves is taught, and then the content of the course is in-depth to the propagation characteristics of uniform plane waves in unbounded loss media [15].

2. THE PROPOSED METHODOLOGY

2.1 The Electromagnetic Fields and Microwave Technology Course

The three-in-one comprehensive evaluation model is a diversified evaluation model that combines formative evaluation and summative evaluation, and integrates the three evaluation elements of learning ability, practical ability, and comprehensive ability [17]. The specific way of realizing the Trinity is to make the students' formative evaluation in the course learning process, the practical ability evaluation in the experimental part and the comprehensive ability evaluation in the final exam to constitute the course grades in a certain proportion. For formative evaluation, the famous American educator Bloom conducted scientific practice and research on it and found that the evaluation model can not only improve teachers' teaching methods, improve the classroom effect of teachers' teaching, but also help students to better tap their own potential, help students improve their intellectual development level, and ultimately improve students' learning effect.

The candidate information obtained in the interview can better reflect the comprehensive quality of the students than the written test. For prospective college students, the interest in the subject is more important than the test scores. Basic knowledge and basic skills, understand the basic concepts, basic theories and basic analysis methods of microwave technology and antennas, cultivate students' ability to analyze and solve practical problems, and lay a solid foundation for future in-depth study and practical application. The goal of ideological and political teaching is in the course teaching. According to the characteristics of electromagnetic field and microwave technology course teaching, combined with the characteristics of strong practical application of communication engineering scientific research projects, the teaching reform of the course is promoted by integrating teaching and scientific research. Carrying out scientific research in combination with the study of basic knowledge.

American educator Bloom's formative evaluation teaching practice and research show that formative evaluation can not only improve teachers' teaching methods and improve classroom teaching effects, but also tap students' learning potential, promote students' intellectual development, and improve learning effects. The main purpose of formative assessment is not to grade students, resulting in grade differentiation among students, or vicious competition or transitional learning pressure among students. existing problems and make scientific improvements to them. The high school academic proficiency test is used as a comprehensive evaluation basis, and there is still a problem of selection validity. Strictly speaking, the senior high school entrance examination is a standard-referenced proficiency test, and the difficulty of the test is much lower than that of the

college entrance examination, so there are many students who get A grades.

2.2 The Trinity Comprehensive

In the project, the curriculum team should fully tap the ideological and political education genes contained in it. "Electromagnetic Field and Microwave Technology" is an important technical basic course for undergraduates majoring in engineering radio, electronic engineering, and communication engineering. Carrying out engineering practice through scientific research, explaining the basic knowledge in combination with the actual situation, and enriching the course content can allow students to intuitively feel the connection between the basic knowledge and the practical application of life. In order to achieve this teaching goal. daily learning performance. Daily learning performance mainly includes attendance, classroom performance, topic discussions, etc., and mainly tests students' learning attitude, learning strategies, and learning ability. For students who are absent from school without any reason, arrive late and leave early, the corresponding normal points will be deducted, and students who actively participate in teaching activities in the classroom will be deducted.

The evaluation of practical ability is carried out under the guidance of teachers. Through students' practical activities in the classroom, teachers make a comprehensive evaluation and summary of their practical ability. In the practical teaching of electromagnetic field and microwave courses, teachers Evaluate students' practical ability. On the basis of "Electromagnetic Field and Microwave Technology", strengthen the training of students in ideological and political aspects such as patriotism education, dedication and integrity education, and dialectical materialism education, so as to realize the basis of ideological and political theory courses and the improvement of comprehensive quality courses.

2.3 The Exploring Evaluation Modes

In terms of the reform of teaching materials, in accordance with the requirements of "China's Education Modernization 2035" issued by the Central Committee of the Communist Party of China and the State Council, the ideological, scientific, contemporary, and systematic requirements of teaching materials are put forward, in order to improve the times and applicability of teaching materials. Process check. Based on teacher evaluation, for the staged chapters, the written test of propositions, and the process assessment are carried out. Test students' ability to understand, apply and analyze course knowledge at the current stage. Students pass the process assessment to determine whether their learning goals have been achieved. For experimental teaching, on the one hand, students need to fully grasp the basic theoretical knowledge of classroom experimental teaching, and on the other hand, teachers need to give full play to their leading role, carry out experimental teaching based on students' main learning status, and provide experimental results at the same time. and phenomena to reasonably explain and explain its contents.

Before teaching professional courses, teachers first need to clarify the logical function positioning of the courses in the overall major and disciplines, help students meet the graduation requirements, and pay attention to the cohesive role of this professional course in their careers. Secondly, with the deepening of the difficulty of engineering courses. For example, when teaching microwave network knowledge, relevant scientific research literature on microwave components such as filters, power dividers, and baluns is used

as supplementary teaching materials. By leading students to read relevant scientific research literature, students can deepen their understanding of microwave network parameters. For the difficulties encountered in coursework, students are encouraged to consult materials or learn cooperatively, and exercise students' information acquisition and analysis ability, knowledge learning ability, communication ability and cooperation skills.

3. CONCLUSIONS

Based on the above, the electromagnetic field and microwave technology teaching course is of great significance to the future development of students. How to provide the teaching effect of this course is a problem that most professional teachers think about. The development and application of the trinity comprehensive evaluation model incorporates the entire learning process of students into the assessment content. The reform of the trinity comprehensive evaluation model of the electromagnetic field and microwave technology course has largely solved the problem of students' poor learning enthusiasm and effective learning effect. Poor questions can comprehensively exercise and test the ability to learn. Practice has proved that this evaluation model promotes "the integration of evaluation process and learning process."

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