Construction Summary of Communication Engineering Major Evaluation—Take the Communication Engineering Major of Anhui Xinhua University as an Example

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Abstract. In this paper, based on the construction performance of communication engineering major evaluation of Anhui Xinhua University, the project team has carried on the comprehensive exploration and practice on a series of problems, such as professional talent training scheme, professional curriculum system construction (including bilingual teaching), professional practice teaching center construction, industry-university-research cooperation. And the improvement of professional evaluation quality was analyzed and summarized systematically. After the actual effect test, the effect is good and has certain popularization.

Introduction

After years of construction, communication engineering major of Anhui Xinhua University has formed a teaching team with professional leaders, backbone teachers and "dual-talents" teachers as the core.

The project team applied for the approval of Anhui Provincial Quality Engineering Project in 2017 (Grant No. 2017jyxm1232), and then consistently applied the standard into the construction of communication engineering major by comparing the indicators of the professional evaluation system of the Education Department of Anhui Province. At the same time, the project team makes a comprehensive practice and exploration on the training program of communication engineering professionals, the professional curriculum system, the construction of the professional practice teaching center, and the research between the industry-university-research cooperation.

Communication Engineering Talent Training Program

In terms of the talent training program, the project team applied the idea of comparison item by item to eliminate the gap index one by one, which improved the evaluation quality of the communication engineering major effectively.

Revised the Talent Training Program that was in Line with the Training Objectives

On the basis of full investigation, the project team focused on cultivating application-oriented talents, combined with professional construction goals and ideas, and developed a new talent training program centering on the enhancement of professional ability.

Focused on the strengthening of professional ability, the project team strengthened basic course training and highlighted quality education. The development direction of professional elective courses was added, and the practical training program was officially included in the talent training program. Relevant courses were replaced by practical training programs, and the results of practical training were recognized by enterprises, and finally the credit was replaced. Through strengthening practice, the characteristics of hands-on innovation ability was highlighted.
Made and Revised the Talent Training Mode that was Suitable for the Training Objective

In teaching staff construction, curriculum construction and other aspects, active teaching reform and innovation was carried out in the continuous optimization of practical teaching conditions on the basis of increasing practical teaching links. Given full play to its own characteristics, the "teaching-practice-employment zero distance" talent training mode was constantly improved, which was to build our school into a local application-oriented high-level university.

**Characteristics of Cultivation System Setting.** Communication engineering majors adopt classified and stratified cultivation system. Firstly, it was teaching-oriented, which paid attention to teaching effect and student evaluation. Secondly, it was scientific research and academic, which paid attention to the cultivation of teachers' applied scientific research ability. Thirdly, it was “double talents” type, which paid attention to the practice of teachers and industry qualification certificate.

**Specialty Features.** On the basis of guaranteeing the teaching of basic theory, we actively developed subjects and science and technology competitions, and organized students to participate in various subjects and science and technology competitions in China. At the same time, through the establishment of school-enterprise cooperation mechanism, the establishment of a phased, multi-level, modular, comprehensive, open engineering training and teaching mode was finished.

**Construction of Professional Curriculum System (Including Bilingual Teaching)**

Centering on engineering projects, we actively carried out practical teaching, compiled characteristic teaching materials to meet the needs of modular teaching, and built a teaching system of modular courses oriented by post ability.

**Developed and Revised Talent Training Programs that are Compatible with Training Objectives**

Focusing on cultivating application-oriented talents, the project team revised the new talent training program based on full investigation and investigation, which focused on the enhancement of professional selection ability.

**Build a Scientific and Reasonable Application-Oriented Curriculum System.** It was adhered to the reform of education, innovation education ideas, which broke through the traditional teaching system, teaching content and course system. And adopted the scientific method, the course system was researched and developed on the introduction of domestic and international advanced, which requested to construct 1-2 key courses to reflect the core of the professional post skills, declared to construct 2-3 course actively in provincial excellent courses and resources sharing. And it was crucial to develop and improve the courses of multimedia courseware, and strengthen the construction of teaching material applied to specialty.

**Reformed Teaching Methods, Optimized Teaching Content, and Established Characteristic Engineering Training Teaching Mode.** It was adhered to student-oriented, which amounted to teaching students in accordance with their aptitude, respecting for individual development, and emphasizing the cultivation of students' innovative consciousness and spirit. To carry on the conformity to the teaching content, it must be strengthened between this major and other related specialized intersection and the fusion. We should constantly deepen the reform of teaching methods, promote the innovation of curriculum and practical teaching system, and actively implement the various types of problem-based teaching.

Project team had built experimental practice bases off as the backing, which closely integrated with the engineering practice of teaching. Further it strengthened the practical training on circuit design, increased network optimization practice and comprehensive training of engineering practice, and so on. So the engineering training teaching model was set up accordingly.
Established a Distinctive Communication Course System

Through curriculum setting, practical teaching arrangement and other educational activities, the general courses, professional courses and career courses of communication engineering would be formed into an organic whole part.

Curriculum System Design and Curriculum Construction Measures. According to the principle of "focus and highlight," the industry needs to be timely implemented into the course content. On the basis of completing the description of basic principles effectively, the theoretical knowledge covered by communication engineering was emphasized. A sound professional co-construction training system has established, which maximized the work process and methods, practice and innovated the knowledge and skills with organic combination.

In combination with curriculum construction, we should vigorously carry out curriculum evaluation to improve the overall quality of courses. Further it must be strengthened the construction of quality courses, featured courses, video open courses and other forms of curriculum. At the same time, the curriculum system and ability training construction was completed as the main line of teaching reform. On the basis of strengthening the basic curriculum, the professional courses were highlighted, which paid much attention to students' engineering consciousness.

Bilingual Teaching Summary. We attached great importance to bilingual teaching in assessment requirements. In order to ensure the quality, academic leaders and professional leaders would be selected for lecturers. The project team systematically studied and summarized the construction process of the first implementation of bilingual teaching in Digital Signal Processing Course of Anhui Xinhua college, in order to achieve the effect of spreading experience.

In teaching methods and means, it was important to stimulate the enthusiasm and initiative of all students fully to learn this course. At the same time, we tried to establish a bilingual teaching program and system consistent with the level of students in our school.

According to the specific situation of teachers and students, the project team developed teaching methods, evaluated and summarized lectures, improved assessment methods, built bilingual websites, wrote academic papers, and carried out paper survey. Specifically, it included the formulation of teaching syllabus, the formulation of teaching methods, the summary of teaching evaluation, the improvement of assessment methods, the construction of bilingual websites, the writing of academic papers, and the implementation of paper survey. The two key indicators of the survey were “whether bilingual teaching is necessary,” and “the satisfaction with the teaching quality of bilingual courses.”

The specific results were seen to Table 1 and Table 2 for details.

Table 1. Whether Bilingual Teaching is Necessary.

| ITEM           | Necessary | Unnecessary |
|----------------|-----------|------------|
| Number of People | 39        | 2          |
| Proportion      | 95.12%    | 4.88%      |

Table 2. Bilingual Teaching Quality Satisfaction.

| ITEM                   | Quite Satisfied | Basically Satisfied | Dissatisfied | Difficult to Evaluate |
|------------------------|-----------------|---------------------|--------------|-----------------------|
| Number of people       | 21              | 16                  | 3            | 2                     |
| Proportion             | 51.22%          | 39.02%              | 7.32%        | 4.88%                 |

Construction of Professional Practice Teaching Center

The construction of practice center was the foundation of the construction of application-oriented majors. On the basis of sufficient investigation and demonstration, and corresponding to the course structure, the project team made a unified plan for the construction of specialized laboratories.
Highlighted Application Characteristics and Constructed Practical Teaching System

We should follow the principle of the combination of elective course and compulsory course, construct the whole process of practical teaching system, and set up a new way of practical teaching reform.

The concrete reform was embodied in the increase of network maintenance and network optimization training and other comprehensive engineering practice training links. No less than one course (textbook) would be developed jointly by the engineers from the enterprise and the teachers from the practice teaching center. In the process of graduation design (thesis) guidance, the "double tutorial system" was implemented actively.

Built up a Team of Teachers Who were Double-qualified and Double-capable

The construction of practical teachers was the focus of the work of application-oriented universities. The center introduced technical talents with high professional quality and strong practical ability from industrial enterprises and scientific research institutes, and established practical teachers with rich engineering experience and teaching experience.

It must be adhered to the combination of teaching and research, to experimental teaching research and reform, to set up closely related to production, to focus on new technology practice courses, to innovative teaching model. And the teachers transformed technical services, scientific research results into operational practical teaching resources with priority, which would be carried out project-based, case-based practical teaching examples.

Professional Industry-university-research Cooperation

Taking enterprise college and communication industry school-enterprise alliance as the platform of school-enterprise cooperation, it trained high-quality application-oriented engineering technical talents for communication industry enterprises. The specific measures are as follows.

School-enterprise Cooperation and Joint Development of Talent Training Program

It was very important to further strengthen the communication engineering students' engineering consciousness and engineering quality, engineering practice and engineering design ability, which in turns to strengthen the students' comprehensive engineering practice education in the enterprise and social environment, and realize the coordinated development of knowledge, ability and quality.

The relevant education and training plan focused on improving the knowledge structure and strengthening comprehensive ability, reorganizing the curriculum system, reforming the talent training mode, introducing the industry certification and professional quality courses into the training program, and grasping the key practical links of experiment and practice. With the full participation of enterprises, a phased, multi-level and modular engineering training and teaching system oriented by practical projects was established initially.

School-enterprise Cooperation to Build a High-level Engineering Practice Teaching Platform

The cultivation of application-oriented talents must have complete engineering practice conditions, including professional laboratories with perfect functions and practical training bases with certain scale and characteristics.

Since 2010, communication engineering has established modern communication and other laboratories through various forms of school-enterprise cooperation with Huawei, communication and other enterprises. In the practice teaching, it was to establish the student-oriented skill imparts, the quality enhancement coordinated development experiment teaching idea, which has introduced the enterprise leading technology idea, the practice case. And it finally caused the school education and the employment enterprise to demand close connection, which has solved the students’ post skill on practicing difficult problem.
Conclusion

Based on the evaluation results of communication engineering major of Anhui Xinhua college, the project team has made a comprehensive analysis and summary on the problems in the evaluation of communication engineering major, such as the talent training program, the construction of professional curriculum system (including bilingual teaching), the construction of professional practice teaching center, and the research between industry-university-research cooperation. It is not difficult to find that considerable quality results have been achieved, which is a positive impetus for further research on professional evaluation.

According to the characteristics of teachers, communication engineering project team has given full attention to personal strengths, which formed three kinds of type, i.e., teaching, teaching and research, management personnel. After years of practice and exploration, it has formed a relatively mature model of practical teaching and educating people, which was with rich practical links, fruitful teaching results and remarkable results in educating people. The comprehensive ability of graduates has been widely praised by employers. Communication engineering professional team has formed initially, and a number of landmark results has produced.

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