Reform of Teaching Mode of Communication Engineering Specialty

Muzi Zhuge

Tianjin University of Technology and Education, Tianjin 300222, China
muzi_40105@163.com

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Abstract. The purpose of this study was to explore a better teaching model for communication majors, so as to train advanced communication professionals adapting to the requirements of the information age. We combined the present situation of communication specialty in our university, and compared the training mode of communication professionals in other universities to find common problems and propose solutions. This paper analyzes the problems existing in practical teaching of communication engineering specialty in normal universities, and puts forward seven reform measures, including revise and supplement the syllabus, optimize the structure of teachers, closely contact the development trend of communication to enrich the teaching content, fully understand the needs of communication personnel and improve training programs, establish practice base, improve the construction of laboratory and focus on cultivating students' practical ability and innovative spirit. The conclusion is that we must grasp the central link of the teaching reform, and constantly improve the quality of education and teaching to create a professional brand advantage.

The use of information technology and computer technology as the representative of the rapid development of high-tech, has promoted the development of society and economy, also has caused great changes in higher education. At the same time, communication is also a very practical profession. To win in the competition, the most critical thing is to have a strong practical ability and innovation ability. Obviously, the major of communication engineering is the main source of all kinds of talents. Since 1998, the Ministry of Education has promulgated the undergraduate professional norms, and made clear the communication engineering professional training objectives. So far, more than 300 colleges and universities have launched the course of communications engineering and there are a large number of teachers colleges among them[1]. Compared with the traditional engineering colleges and universities, there are some inherent shortcomings of the starting point and background, especially in the practice of teaching. Practice teaching is an important part of college teaching system, it is an important way to cultivate students' ability to analyze and solve problems.

1. Major Problems of Communication Engineering Specialty in Normal Universities

(1) The experiment teaching system structure of communication engineering specialty is not reasonable. Firstly, basic and confirmatory experiments are much more than innovative experiments, secondly, the content of experiment teaching has the phenomenon of repetition or omission, and thirdly, some of the experimental items which need expensive experimental equipment cannot be carried out because of lack of equipment.

(2) It is over emphasized the systematic nature of the theory of the curriculum system and teaching content, and the teaching design has not broken through the single mode of "subject standard". Unable to establish a variety of teaching model to cultivate application-oriented talents, the students' learning enthusiasm is difficult to improve, divorced from the needs of enterprises; it is difficult to truly grasp the effective demand of the industry.

(3) There is a lack of a "double qualified" teaching body to adapt to the cultivation of applied talents. As age, qualifications of teachers and the engineering practice structure are not reasonable, teachers are out of touch with the needs of the industry, due to lack of clear direction of academic research, the professional knowledge should be strengthened, and moreover, teachers generally lack the exercise of practice and training.
(4) There is a lack of engineering background of Engineering Colleges and universities, and engineering areas are not closely linked. Communication technology updates fast, teaching content lags behind the development of communication disciplines. At the same time, students are not interested in training and practice of communication, lack of career planning.

(5) The students' practical ability is weak, and the teaching mode needs reform. In order to highlight the characteristics of the specialty, and to train the advanced communication talents for the society and the communication industry, we must adjust and reform the present teaching mode. According to the survey, the practical ability is one of the most important qualities and abilities that college students need to improve, as shown in fig. 1. At present, to carry out production practice and graduation practice in related enterprises is an important means to improve students' engineering practice ability, and is the best way to train application-oriented talents in school enterprise cooperation. However, as far as the actual situation is concerned, there are some problems in the scope and depth of school enterprise cooperation, for example, the lack of motivation for enterprises to participate in school enterprise cooperation and the lack of government’s support of school enterprise cooperation[2].

![Figure 1. The cultivation of the most important quality and ability of College Students.](image)

(6) The direction of the professional is not clear, there is not a good study of the relationship between professional orientation and employment channels[3].

2. Reform Measures

2.1 Revise and supplement the syllabus

As a guiding document to train college students, teaching syllabus plays an important role in training students' theoretical knowledge and improving their practical ability. The theory course syllabus and experiment teaching syllabus should fit the educational objectives. The preparation of the syllabus should not only pay attention to the scientific nature of the knowledge structure, but also the advanced nature of the knowledge. We should update teaching materials and introduce new curriculum system. The compilation of experimental syllabus should embody knowledge and creativity. The experiment should include the verification experiment, this part of the experiment is synchronized with the theory, combined with experiment content and course content, what experiment and what time to do the experiment should be required by the teachers according to the theory of teaching, agreed with Lab teachers. The designing experiment after theory course is in the form of exercises, and the students are required to use equipment and materials of laboratory to design the plan and finish the task. Innovative experiments can be arranged for students to graduate design, curriculum design, or participate in the research of teachers. Under the guidance of teachers, they have a certain degree of scientific research quality and innovation ability. Experimental teaching should strengthen the cultivation of practical ability, and give full play to the
main role of students. To establish multi-level experimental model such as basic experiment, key courses design experiment and comprehensive design experiments. The curriculum design of the key courses requires students to complete the engineering practice from system analysis, program design, software simulation, circuit board design, assembly and debugging.

The rapid development of communication technology requires teachers to update their knowledge system, learn new technology, keep pace with the development of technology and cutting-edge capture technology and abandon the obsolete knowledge. Teachers should not only pay attention to the rationality of the curriculum, but also add new content, update teaching materials, and use authoritative textbooks when composing the teaching program, ensuring students to acquire new knowledge. The experiment teaching syllabus should embody the integrity and innovation of knowledge, in addition to some demonstration experiments, comprehensive or designable experiment is also important, theory teachers personally guide the experiment, teaching and experiment can’t be decoupled, problems in the course of experiment that students encounter can be solved on the spot, and at the same time, thinking questions corresponding each experiment should be arranged, to mobilize the enthusiasm of students learning.

2.2 Optimize the structure of teachers

In addition to the introduction of academic leaders, as the teacher age structure of communication specialty slants young, it requires the cultivation of the young teachers. Further education or training is encouraged to constantly improve their own knowledge system and train scientific research ability[4].

In order to improve the students' practical skills, "Double-qualified Teachers" can not only teach the basic knowledge of communication specialty, but also be familiar with the post operation of communication, and be good at communicating professional talents with strong practical ability through proper teaching methods. Therefore, it is imperative for the majors to improve their communication theory, knowledge level and job skills in the communications industry.

2.3 Closely contact the development trend of communication, enrich the teaching content

Many teachers, after teaching their courses, think that their tasks have been completed, in fact, as educators in the new period, in addition to the completion of their own teaching work, they should pay attention to the current development trend of communication engineering. It is known that in the modern information technology rapid development of the society, if teachers do not pay attention to the communication engineering technology development trend, do not usually pay attention to learning and accumulation of new knowledge and professional communication engineering, they will fall behind the times, behind the development of the society, so as to make themselves to the last to be "eliminated". Teachers should pay special attention to this link.

2.4 Fully understand the needs of communication personnel, improve training programs

The goal of school training mode is to train practical and innovative talents for the society. In this process, teachers play a key role. After completing the normal teaching, teachers should pay attention to the talent demand changes from year to year, understand and grasp the change of the social demand for talent, so that they will have more time and energy to adjust their teaching content, teaching methods and teaching mode, so that their teaching has always been able to keep up with the times changes, and their students are always at the forefront of talent needs.

2.5 Establish practice base

Fully understand the position and function of practice teaching in the application oriented teaching system construction of the college, and combine the social market demand closely, train the knowledge application ability of the application talents of communication engineering specialty [5].As the communication equipment investment is large, colleges might be failed to provide equipment matching social demands to fully meet the teaching needs, in order to train the students as practical talents suitable for the demand of the society, it needs school enterprise cooperation. Senior students can go to practice in the company, and employing senior management and technical personnel of the company as external teachers for communication majors, they can participate in the teaching process, teaching communication technology[6]. This would enable students to understand
what kind of communication talent is needed in society, so as to help train the application talents of communication specialty.

2.6 Improve the construction of laboratory

Laboratory construction is a very complicated system engineering and needs to be paid enough attention to. On the basis of the existing laboratory equipment, we should strengthen the laboratory construction, keep pace with the development of communication technology, and ensure the advanced nature and application expansion of the experimental equipment. In the construction of specialized laboratory, a communication laboratory is organized by function module, consider all professional laboratories as a system, each specialized laboratory as a sub module of the system. They can cooperate with each other to complete the relevant laboratory skills training, or complete a professional experiment training alone, to facilitate the implementation of comprehensive experiments between different courses [7].

2.7 Focus on cultivating students' practical ability and innovative spirit

In order to train students' practical ability and innovative spirit, we should arrange and set up practical teaching plan scientifically, emphasize practical theory, strengthen practical teaching, and improve students' practical ability and practical ability. We should pay attention to the cultivation of students' innovative ability and comprehensive ability, and pay attention to the cooperation of communication and high-tech enterprises. Specific to the following directions to make efforts:

(1) we should strengthen practical teaching links such as experiment, practice, social practice, graduation project (Thesis), guarantee the time and effect of each link, and put the theory teaching and practice teaching in the same important position.

(2) we should constantly reform the content of practice teaching and improve the practical teaching methods [8]. We should change the situation that there are too many teaching hours in class and too little practice hours. We should attract high-level teachers to practice teaching work through policy guidance. The students should carry out preliminary exploratory research through their own selected topic or participation in teachers' research and other forms.

3. Conclusion

The development of modern information technology represented by communication technology and computer technology change rapidly and communication technology is developing at an unprecedented speed. In order to keep up with the information age, we must grasp the central link of the teaching reform, and constantly improve the quality of education and teaching to create a professional brand advantage. Strengthen the practice ability of students and make the professional talents of communication to adapt to modernization and informationization. Only in this way can our teaching work adapt to the development of the times.

4. References


