Major Construction for Applied Transition in Newly-founded Undergraduate Colleges: Taking Mining Mechanical Major in Pingxiang University for Example

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Abstract. To strengthen construction of characteristic majors is the key application for the applied transition in newly-founded undergraduate colleges. The research on the major construction is carried out in this paper. The development goals and ideas are summarized with main contents. Taking the underground mining mechanical engineering in Pingxiang University as an example, the major construction is advised. It concludes improving major training program, developing class study resources, establishing applied teaching team, exploring industry-university research cooperation and applying collaborative innovation. The reform of university education teaching for the applied transition is investigated to promote the major construction.

Introduction

Newly-founded undergraduate colleges face opportunities and challenges in the development of applied transition. With the rapid development of higher education and the country's economic and social in China, many region locally college are gradually upgraded to the applied-oriented universities. The locations of these newly-founded colleges for applied undergraduate, generally have typical locally specialties. Currently the related education teaching reform research are focused on how to carry out the transformation of local undergraduate universities, to fully implement the requirements of the development, to explore new teaching methods and to improve the personal technology training program.

Engineering science and applied engineering education in universities was developing many years to improve the application technology abilities [1]. The new wave for the applied transition in the world wide was focused on the students’ skills [2, 3]. In recent years, team study mode with others practice teaching method was developing to adjust new requirements from task of applied transition [4, 5]. They carried out some research and find improved measures to meet its requirements. The innovation learning, characteristics teaching and customized studying were suggested. Due to the unbalanced development of the undergraduate education in China, the main task of the development for newly-founded colleges were the chosen a methodology that compatible with itself unique features [6]. And the construction of
Characteristic majors was one of the effective methods for the significantly applied transition in the education reformation.

The newly-founded colleges or universities are at a critical stage of transformation and development. Constructing majors with distinctive characteristics of the local industry can effectively improve the level of talent training. It improves personnel practice skill application ability and meets the needs of the local industrial development. However it helps to promote the university personnel training and local human resources demand. The characteristic specialty construction in the process of developing applied transition is carried out with practice research in this paper. With the construction of mining machinery major in Pingxiang University as the example, the suggestions and implementation methods are introduced in details. It is carried out with experience research to investigate an effective educational and teaching reform research.

Basic and Aims

Mining machinery industry has the local characteristics and traditional advantages in Pingxiang City, Jiangxi province, China. Relying on the major of the mechanical design and manufacturing and automation, professional talents training and professional teaching in the field of mining machinery have the basis of the certainly education teaching resources. According with the field research and development of production and research cooperation, it establishes the mining machinery professional research team with basis for academic research and practical experiences. The general purpose of the mechanical specialty undergraduate talents training also provides the basics of this work. It concludes the characteristic specialty theory, the practice teaching and the application skill training, which provides the good implementation condition.

Pingxiang University is a typically locally college and new undergraduate university. Its characteristic major for applied transition construction is summarized as the following items. They are the outstanding professional features with specifically advantages, the aims at cultivating applications for complex skilled personnel technology training, the rich educational resources for personnel training and effective and the higher research with collaborative innovation ability. In this process, the training teaching and research team within characteristic major are established. The training base of application-oriented professional talent is built for the research and application of collaborative innovation platform. And the service for local industry research and development effectively is carried out by the higher education teaching and personnel training.

Methods

In terms of the characteristic specialty, the major construction for applied transition is a kind of teaching innovation. Its core is to apply the characteristic specialty construction to achieve the goal of training applied teaching for the professional skilled persons. The basic idea with methods is shown in Fig.1. According to the development plan of the application transformation, the objectives are confirmed here at first. Then through the analysis of professional orientation, the orientation and teaching with research requirements are filled with subject development. It needs to be combined with talent orientation, to carry out the characteristics of mining and demand research. After that these objectives are integrated and combined with the original teaching resources to form this construction program.
According to the characteristic subject in special, the construction goal of the idea is used to further clarify the work of the sub items and tasks. The formation of specific construction and implementation of the content is taken out. Its details conclude that to improve the characteristic major advantages and characteristics, to integrate configuration of existing teaching resources, to develop the personnel training program with professional characteristics, to optimize the application teaching practice, to build the practice teaching platform with the development of specialty teaching resource library and to compile the application training materials. And it also helps to explore cooperation technology training, to investigate application skills teaching mode, to build collaborative innovation talents training and practice base, to cultivate high level professional research with teaching team leaders and to expand the applied science and technology research.

**Practice**

**Improve Training Program of Characteristic Professional Talents**

In terms of the application transformation based on the original mechanical professional training program, to improve the talent training program is the basis for the characteristic major construction. On the one hand, it needs to reform the current education mode of professional basic course teaching, to further enrich the direction of mining machinery major courses and to increase the time of practice and hands-on learning. It can enhance students’ practical ability in major study. While on the other, the introduction in the course of major courses should be add
information about theory and technology of mining machinery engineering. It is useful to apply
the basic theory to the design, manufacture and development of mining machinery.

**Develop Practice Teaching Resources for Application Skills**

The development of teaching resources on practical platform is important to effective
promote the professional teaching for application transition. With the requirements of mining
machinery development and practical teaching, it is necessary to develop the computational
virtual prototype teaching resources. It would set up typical product’s complete machine model
and virtual prototype databases. These resources in the course of mechanical major would be
used in class theory and practice teaching. Also it would be expanded to the other applications
in the teaching activities such as the graduation project, the competition of the subject and the
practice of scientific and technological innovation. Kinds of professional and technical
application materials and training manuals for training application skills would be summarized
by the teaching team. It used to develop the application courses and teaching methods.

**Establish Characteristic Major Application Oriented Teaching Team**

A professional teaching team could be qualified application oriented practical skills training.
It is the key item to carry out the characteristic major construction for the applied transition. It is
taken out to improve the teacher's professional practice ability and cultivate the development of
the double-qualified teacher training. Through school enterprise cooperation, teacher training
practice and application ability would be strengthened gradually. At the same time, it is helpful
to engage in the practice of experienced engineers or practical application of skilled technicians
and other skilled technicians to participate in school’s professional teaching. It would be jointly
set up a characteristic major application oriented of the teaching team.

**Investigate Training Mode of Industry Academic Research Cooperation**

Exploring the training mode through the industry academic or school enterprise research
cooperation is an effective method for the specialty construction. It can carry out teaching
practice and to train students in the industry field experiment environment. Moreover the
in-depth research in the combination of production and research provides a good platform for
practical application. By setting up the teaching team and using the research platform, the
enterprise high level of professional and technical personnel training teachers with definitely
courses could be invited for the application technology experiment and practice training. And it
is required to intensify the implementation of research projects, improve the level of applied
research and practical abilities of teachers.

**Build Applied Collaborative Innovation Research Platform**

The establishment of application oriented collaborative innovation research platform can
effectively support the construction of characteristic major. The collaborative innovation could
break through the barriers of discipline, major, system and industry. It improves the depth
advance cooperation between universities, research institutes, enterprises and government. It
would realize technology resource sharing and technology innovation. It helps for the further
research cooperation and technology innovation base construction. Around the local
characteristics and needs of economic social development, it is necessary to build the
professional and innovative research platform for mining machinery. It is focused on cultivate
characteristics to carry out the construction of specialty for the applied transition reforming.
Summary
The applied transition development is the urgent task for the newly-founded undergraduate colleges. According to their ownly characteristics, the one of the important means of transformation and development is to carry out the characteristic major development. And it is necessary to reinforce the foundation and to improve the teaching level and the competitiveness of the undergraduate. Due to the practice of this teaching reform research, the experience of the characteristic major construction of mining machinery in Pingxiang University is introduced here. It would be helpfull to the construction of characteristic specialty and to better promote the transformation of major construction in similar universities as references.

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References


