
Research on Talents Cultivate Mode Based on the Combinations of Discipline, Major and Team

Haifei Si^{*}, Xingliu Hu, Zhong Yang

College of Intelligent Science and Control Engineering, Jinling Institute of Technology, Nanjing, China

Email address:

sihaif@jlit.edu.cn (Haifei Si), xinghu8@163.com (Xingliu Hu), yz@jlit.edu.cn (Zhong Yang)

^{*}Corresponding author

To cite this article:

Haifei Si, Xingliu Hu, Zhong Yang. Research on Talents Cultivate Mode Based on the Combinations of Discipline, Major and Team. *Science Journal of Education*. Vol. 6, No. 3, 2018, pp. 87-93. doi: 10.11648/j.sjedu.20180603.13

Received: April 4, 2018; **Accepted:** May 18, 2018; **Published:** June 20, 2018

Abstract: In this paper, a applied talents training mode is proposed the based on the combinations of discipline, major, and team. Major and discipline are the foundation for the survival and development of colleges and universities, as well as the advantages and characteristics of a school. Talent training is the most important function of colleges and universities, and the construction of teaching staff is the focus of talent training in Colleges and universities. Based on the analysis the connotation of the disciplines and major and their mutual relations, team construction is discussed. All of these are to promote the quality of talent cultivation. In order to get optimal effect of applied talent cultivation, the automation major of Jinling institute of technology vigorously promote the reform of education teaching, innovative practice teaching method and the personnel training mode, In the construction of the process, some beneficial exploration are achieved, which provide reference and reference for practical education teaching reform in colleges and universities.

Keywords: Talent Training Model, Education Reform, Discipline Construction, Application-Oriented

1. Introduction

Major is the general term of the discipline plan and plan for colleges and universities to cultivate specialized talents based on the development of science and the classification of disciplines and the division of social work. Discipline is a relatively independent knowledge system. It is a knowledge classification based on the nature of systematic knowledge that reflects objective things correctly. The two have internal unity.

The discipline is the foundation of the profession. Discipline is the classification of scientific knowledge system, and different disciplines are different scientific knowledge systems. After the eighteenth Century, the natural sciences were separated from the philosophy, and they were divided into different fields of discipline. In order to carry out the study in different categories, a series of subjects such as literature, engineering, science and management appeared in 12 categories. The trend of the comprehensive development of the disciplinet has increased greatly. The original disciplines, such as the environmental discipline and the

energy discipline, have formed the discipline basis of the modern universities.

Major is the choice and organization of the disciplinet. The major is based on the knowledge system of a certain discipline, leaving the discipline knowledge system, and the profession has lost its reasonable basis for existence. In a discipline, a number of majors can be formed; interdisciplinary subjects can also be formed among different disciplines. Setting up a major in universities, we should not only consider the subject basis but also meet the needs of the social users, determine the professional training requirements of a certain range of professional adaptation, certain levels and specifications, and then, according to the requirements of professional training, generally choose one or three classes of three level disciplines as the relying subject in a series of disciplines. The relationship between discipline and Major is like the relationship between land and plant. Subject is the soil of professional growth. Therefore, whether the layout of the subject is reasonable or not is a prerequisite for the formation of professional growth points and the continuous development of the Major. The same discipline construction is also inseparable from the profession, because Major is an

important carrier of discipline construction.

Disciplines and specialties are different concepts, and the composition of the two is different. The basic elements of an independent subject are mainly: the object of research or the field of research; the strict logical knowledge system of the theoretical system, that is, the unique concepts and principles, and the methodology, that is, the mode of production of subject knowledge. The main components of the major are: professional training objectives, curriculum system and professionals. The purpose of training is to express the meaning of professional activities. Curriculum system is the product of the combination of social vocational needs and subject knowledge system, and the content and structure of professional activities. Whether the curriculum system is reasonable or not directly affects the effect of personnel training. Professionals mainly include educators and educator, without "human" intervention, and professional activities can not be completed.

The objectives of the subject and the major are different. The goal of discipline development is knowledge discovery and innovation. The discipline serves the society in the form of knowledge form. It is generally referred to as scientific research achievement, and scientific research results can be divided into two categories: scientific and technological. The aim of the profession is to train professionals at all levels for the society. The distinction between subject and professional goal shows that there is an irreplaceable nature between them. The coexistence of disciplines and specialties is a peculiar phenomenon in universities. They are interdependent and mutually reinforcing. Discipline is the base for disciplines to undertake the function of personnel training, and discipline is the foundation of professional development. The quality of personnel training in a university depends largely on its subject and professional level.

Major and discipline are the foundation for the survival and development of colleges and universities, as well as the advantages and characteristics of a school. Talent training is the most important function of colleges and universities, and the construction of teaching staff is the focus of talent training in Colleges and universities.

Scientific research is the source of teaching innovation. Putting the latest achievements in science and cutting-edge knowledge into the teaching process can deepen the content of the construction of the professional, also can be integrated into the scientific research of creative spirit, which can constantly improve the students' creative ability and innovative spirit. All of these provide a powerful guarantee for cultivating high quality applied talents. The construction of disciplines and specialties need the power of the team. In creative and applied discipline research and professional construction, some teaching achievements are got unceasingly, thus promoting the continuous improvement of automation level of training applied talents. The national medium and long-term education reform and development plan outline says that in the cultivation of talents development mechanism, we should develop comprehensive talent cultivation, give prominence to cultivate innovative

talents and pay attention to cultivate applied talents.

The correct positioning of talent cultivation level is the basic basis for the development of disciplines, which is related to the development direction, development goals and development pattern of the discipline. When constructing the talent training mode, application-oriented undergraduate colleges must be based on the correct guiding ideology and correct positioning. through scientific analysis of the social needs. They should correctly estimate their own school strength, take the initiative to adapt to the environment to realize own correct orientation, optimizing the allocation of teaching resources, formulate correct development goals and reasonable training mode.

2. The Combinations of Discipline, Major and Team

Talent cultivation, scientific research and social service are the main functions of universities, and the disciplines in universities are the specific undertakers of various functions.

University research team construction is a basic measurement to play integration advantages, strengthen discipline and promote scientific research. It can benefit discipline construction and talent cultivating organizational forms.

In essence, there exists symbiotic relationships among discipline construction, major construction and team which can promote the discovery and innovation of knowledge and improve the quality of talent cultivation. The relationships among three factors is shown in figure 1.

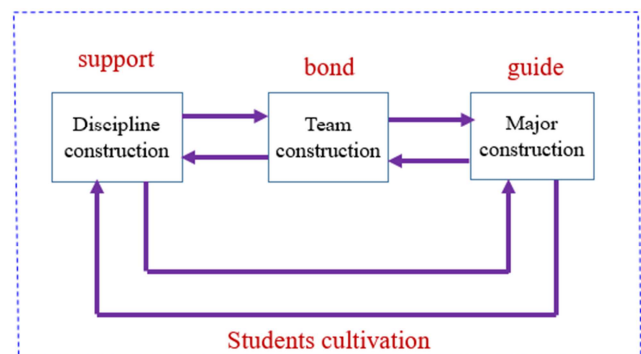


Figure 1. The relationships among discipline construction, team construction and major construction.

2.1. The Difference Between the Major and Discipline

The major is built to undertake the function of talent training for discipline. From the social point of view, the major is to set up to meet the training needs which engaged in a type of social profession. Major is in the intersection of discipline system and the social professional demand. It is the nature of this "intersection" that determines the basic characteristics of the major.

2.1.1. Major Teaching Plan Composed of Three Courses

The major teaching plan is a combination of three courses,

which are moral courses, scientific and humanistic courses, and basic knowledge courses. A combination of professional knowledge and skills training courses. The first course is necessary for students to conduct a comprehensive quality education foundation (roughly equivalent to the so-called general education curriculum in some western university), the second and the third type of course is required by the professional training target of senior specialized talents. No matter how the professional training program is reformed, no matter how the components of the various courses are changed, and no matter how many different specialties of each school, the 'three types' combination mode' has not been broken. The principles embodied in this curriculum are aim at educating people, rely on the subject and orient by social needs.

2.1.2. The Difference Between the Major Division and Discipline Division

Based on one discipline, several majors can be set up. These majors are called 'similar majors'. Because of the same basic knowledge courses. A major may involve several disciplines, but even these disciplines may belong to different disciplines, these majors are often referred to as "interdisciplinary major or 'composite major'. This is just a reflection of the different principles of setting up a major and division discipline. The division of disciplines follows the logic of the knowledge system itself, thus forming a "tree branch structure". Discipline and its branches are relatively stable knowledge systems. Even in the new interdisciplinary, these disciplines have their own relatively stable research areas.

2.1.3. The Variability of Major

The major of university will change with the adjustment of social industrial structure and the change of talent demand. This change is reflected in the new major, the old major is constantly updated or eliminated. Some majors from 'cold' to 'hot' or vice versa. Analyzing the total number of all kinds of ordinary university undergraduate professional choices. The ratio of students with first major choice to students with the major enrollment reflects some major popularity.

The behavior of higher schools and students in the major choice, although it does not accurately reflect the social occupational demand, but it reflects the trend of the change of social occupational demand in general. The major is changed, and the discipline is relatively stable.

2.2. Play the Role of Discipline to Promote Major Construction

Discipline is the concept of science, which is both a knowledge system and an academic system. The major is the concept of sociology, which means specialized study or profession. A major is made up of several courses. The discipline construction emphasizes the construction of a high level scientific research team, and the major construction emphasizes the cultivation of professional talents with broad knowledge, strong application ability and strong employment

competitiveness. The discipline is the university's cell and university's technical core area. The discipline is not only a platform for scientific research, but also a platform for teaching. It is not only a platform for the construction of a scholar team, but also a platform for serving the society.

The discipline of control science and engineering in Jinling institute of technology is one of Jiangsu province key construction disciplines, it insists on discipline team construction under the concept of integration of academic disciplines, specialties and team. In order to meet Nanjing city and Jiangsu Province's economic and social development needs, we integrate concise research focus and research direction. It will promote the improvement of professional education level and quality, it will also promote the improvement of professional connotation construction by applying a series of scientific research projects and scientific research achievements to professional teaching and personnel training.

2.2.1. Absorb Students into the Research Team of Teachers' Projects

By participating in scientific research projects, students can improve their learning ability, ultivate their innovative awareness and enhance their cooperation ability. Teachers guide students to declare national patent and writing scientific papers, make the students master the patent novelty search, patent material organization, science and technology thesis writing and publication and so on. They cultivate students to find and solve problems, train students' innovative consciousness ability. We guide students to obtain 7 national patents and publish 6 papers. Teachers published more than 90 academic papers, 20 educational reform papers. More than 60 national patents are authorized.

Students participate in teachers' transverse scientific research project under the guidance of teachers. They analyze and solve problems, study professional knowledge which applied to the enterprise actual project. By doing so, students' team cooperation consciousness are trained and their ability in engineering application are improved. Teachers conducted 16 horizontal cooperation projects, and the project contract amount was 7.6 million yuan.

We signed a contract with Nanjing industrial co., LTD. The contract is about the industry-university-institute cooperation agreement and cooperation in the field of solar photovoltaic research and new product development. At present, solar technology patent has been applied to the socialism new rural construction projects, the Shanghai world expo, the UN pavilion solar photovoltaic building integrated project and Nanjing youth Olympic Games athletes' village solar integrated projects.

2.2.2. Introduce New Knowledge in Scientific Research into Curriculum Development

Curriculum, teaching content, and teaching material is an important part of discipline construction. Curriculum and the first-class teaching material is also the important scientific research achievements. When teachers absorb the new research achievements to the course content. These teaching

materials and the materials setting up discipline frontier for elective courses or lectures must base on the theoretical basis of achievements in scientific research and the application prospect. The process is formulate a scientific research achievements.

We optimize the curriculum system, take engineering theory and engineering application education as the core, and form an automation professional talent training scheme focusing on industrial characteristics. We professional teachers take charge of the research project of provincial and university-level teaching reform, and has 2 excellent courses, 5 excellent courses, 2 research courses and 6 textbooks.

According to Humboldt's thought, the introduction of scientific research into teaching in class teaching is reflected in the "teaching" of teachers, as well as the "learning" of students. In "teaching", teachers will introduce the latest scientific research results to the students in a timely manner, and introduce new knowledge, scientific frontier and scientific research methods.

At the same time, the academic paper and other scientific research achievements are used as reference materials for students to read after class. Teachers provide relevant teaching materials for the course construction. The course content can also improve students' interest and enhance the teaching effect. In terms of "learning", by introducing scientific research results into classroom teaching, we can cultivate learning. Scientific research interests and scientific research methods will facilitate students' early participation in scientific research, development of scientific research capacity and creativity. They also can help to expand the depth and breadth of undergraduate study, improve teaching quality.

2.3. Strengthen Major Construction's Guidance to Promote Discipline Construction

Major construction is the carrier of discipline construction. On the one hand, major construction is the undergraduate education of personnel training base. On the other hand, the process of the construction of the major is to conduct the thorough research to the scientific research and summary process. The discipline emphasizes the cultivation of academic leaders and academic echelons, which is consistent with the goal of strengthening the construction of teachers in major construction. It also determines the symbiotic relationship between the two.

Major construction can be divided into two levels, the macroscopic and microscopic construction in terms of school level. Major construction mainly consider professional settings, major layout, adjusting the structure of the optimization and the construction of key major supporting. The macro issues mainly includes the social development needs, developing major training objectives and specifications, the major teaching plan, curriculum construction, teaching material construction, practical base construction, teaching method innovation, etc.

2.3.1. Understand the Inner Connection Between Discipline and Profession

Disciplines and specialties in terms of talent training is often understood as the same concept, generally referred to as the 'discipline' in the undergraduate course of colleges and universities in our country, It also reveals the relationship between discipline and major is inseparable. The major is the platform and expression form of the talent cultivation function carried by the discipline construction, and the discipline is the foundation and support of the professional development knowledge system.

The quality of talent training depends on the level of the development of the discipline, and the cultivation of high-quality talents has promoted the improvement of the level of discipline development. The intersecting of the so-called discipline and disciplines is not only reflected in the intersection of the teaching function and knowledge system of different disciplines, but also the intersecting of the research fields of different disciplines. In recent years, the model of "compound" talent cultivation and "interdisciplinary professional" talent cultivation, which is actively explored by Chinese universities, is a vivid embodiment of the inner connection between discipline and profession.

From the logic internal relation between discipline and profession, the two are interdependent, interactive and cooperative. Discipline construction is the process of knowledge heritage of innovation and scientific advantage accumulation, support for the professional construction and development.

The discipline construction provides knowledge system support for professional construction and development, which is an important foundation for professional development. Through the discipline construction and scientific research, we can improve the overall quality of teachers, teachers' teaching and scientific research ability level. It makes the discipline resources enter into professional teaching resources effectively, such as the related research projects and achievements for the new curriculum and teaching material content.

2.3.2. Major Construction Promotes the Development and Level of Scientific Research

It is an important aspect of the discipline construction that the professional construction provides the high quality human resources support and the possibility of the professional differentiation and integration. Major construction and talents training process, especially early undergraduate students to participate in scientific research, is the important way to cultivate innovative talents, promote the development of the discipline and enhance the level of scientific research.

This major is closely related to industry executives, industry associations and industry enterprises. We has established a professional steering committee composed of employing units, industry experts and university teachers. Enterprises and industry experts participate in the system of

talent training program, and participate in the process of personnel training. In this process, we learn about the dynamic and latest achievements of the industry and the academic frontier, and promote the development of topics and research activities of scientific research.

The major development is close to the economic and social development needs of Nanjing city and the development needs of the intelligent manufacturing industry. We combine teachers' professional teaching and personnel training with scientific research projects and application of scientific research results, which can improve the level of discipline construction and promote the upgrading of the discipline construction level.

2.4. Adhere to the Link of Team to Promote the Integration of Discipline Construction and Major Construction

The survival and development of any individual is inseparable from the successful construction and development of the team. As Bill Gates, the President of Microsoft, once said, 'team work is the guarantee of a successful business, and a company that does not value teamwork will not succeed.' Therefore, in terms of institutions of higher learning, it is necessary to build a cohesive team for teaching and scientific research. Under the guidance of team leader, good coordination of the team members can fully arouse the enthusiasm of every team member. It can inspire the creativity and power of each member to the limit. The team is necessary conditions to guarantee a first-class academic level and excellent creative ability of high-quality innovative talents.

2.4.1. Strengthen the Construction of Teaching Team

Team refers to a group of people who have a common goal and are jointly responsible for the realization of the goal. Collaboration between members to form a formal group, with a clear goal, and interdependence, division of labor cooperation, and responsibility sharing etc. In terms of college development, the teaching team is to improve the teaching quality and effect, promote the reform of teaching as the main task, by mutual responsibility for the common goal of teaching reform of teachers. Comparing with the academic team, teaching team has its own unique structural elements.

The teaching team should embody path-breaking and exploratory in teaching reform. Teaching reform should have clear and definite teaching concept, unique teaching modes. Teaching team should become reform advocates and practitioners of traditional teaching mode and teaching method. It has specific reform measures which can produce good teaching effect and improve the quality of talent training as an important symbol of measuring teaching team performance. Teaching team leader is the core and soul of the team who has a dual role practitioners of teaching reform. The team leader should also have high academic attainments and good organization coordinated ability, in addition to should have rich experience in teaching practice and innovation education idea. The members of the teaching team should be the teaching collective formed on the basis of long-term

cooperation, with reasonable title, knowledge and age structure.

Teaching team should has experimental teaching base, exquisite course construction and teaching reform project. Only teaching team be in the strong consciousness of teaching reform and experience accumulation, can guarantee the necessary funds. In long-term task of teaching reform on the basis of the platform, teaching team can effectively develop a high level of teaching reform practice work. According to different tasks and the nature of the course teaching reform, the teaching team can be roughly divided into professional basic course teaching team, a professional teaching team, public course teaching team, etc. The professional basic course teaching team should embody interdisciplinary and cross-major to broaden the students' knowledge horizon. The professional curriculum teaching team should embody the academic and practical aspects to cultivate students' innovation and practical ability as the main task.

Establish effective teaching team within the team management and operation mechanism is the key to the healthy development of the teaching team. The results need a relatively long time, teaching team construction should also adhere to the open and dynamic development of the idea, according to the rule and trend of professional personnel training. Teaching team should constantly absorb new ideas, new methods of teaching reform based on the actual needs of teaching content reform, absorb other disciplines involved in the teaching team of professional teachers.

In the teaching team, it is necessary to strengthen the responsibility mechanism of team leaders and the final elimination mechanism of team members by means of target motivation and competition incentive. We should give full play to the wisdom and creativity of team members, establish a regular research mechanism and democratic consultation mechanism for teaching reform, and form a cohesive force and centripetal force of the team.

In addition, the effect of teaching reform and talent training quality, one is the most students' evaluation, therefore, construction of teaching team is to set up the mechanism of school evaluation, student evaluation and the combination of internal self-assessment team system. We should provide a good operational mechanism for the sustainable development of the teaching team.

2.4.2. Correctly Deal with the Relationship Between the Teaching Team Construction and the Academic Team Construction

The relationship between the teaching team construction and the academic team construction is closely related to the teaching and research, they each are an integral of the existence and development of colleges and universities. Both of them and each has its relative independence in both management system and operation mechanism of resource use. There is inevitable contradictions and conflicts, both in the relationship between the teaching team construction of academic team and so on. But in comparison, the construction of academic team pay more attention to quantitative criteria of

scientific research evaluation, research results is relatively easier to appear. On the contrary, the teaching reform results requires a relatively long time, and its evaluation standard also various, it is not easy to recognized results, therefore, more should pay attention to the long-term teaching team construction.

From personnel and resource utilization point of view, the academic team and teaching may has a cross and overlap. Some teachers may be academic team leader or member of the teaching team, it is also possible in the division of functions, especially on the combination of teaching and scientific research function requirements. But after all, belongs to different teaching and research activities, operation mechanism, the way of examination and evaluation significantly are different, some teachers may serve as the head of the academic team but don't fit as the head of the teaching team, and vice versa.

At present, the construction of teaching team has not attracted enough attention from colleges and universities, and the time and energy invested by teachers in teaching reform and teaching research are not enough. Compared with the academic team, the most important part of the teaching team building is the lack of corresponding funding, and the cooperation mechanism of teaching reform is far from being formed.

On the one hand, it is related to the policy orientation of the light teaching of scientific research in universities in recent years. It is related to the problem that the university leaders have not really attached great importance to the teaching reform and teaching quality. At the same time, the school should strengthen the overall planning, so that the academic team and the teaching team work together to promote the improvement of school teaching and research quality.

From the perspective of the development of universities and the improvement of teaching quality, the teaching team has three tasks: innovation education idea and education concept, generate new teaching mode, promote teaching reform and improve teaching quality. Based on the current situation and problems of college teaching reform, the teaching team should also focus on the following target positioning. one is to improve the overall teaching level of the school. By setting up a teaching team, we can make clear the orientation of curriculum or teaching reform supported by the school, and find the correct entry point. Integration of teaching resources, to promote teachers' cooperation through the formation of the teaching team, can effectively integrate the teaching resources. It can encourage and guide the cooperation of teachers in the teaching reform. On the basis of the team, we can train students comprehensively, deal with complex problems of teaching, improve the quality of personnel training and promote the formation of the collaborative atmosphere.

3. Conclusion

Discipline construction is the foundation of major

construction. The discipline is the basis of major development, and the major is the base for the cultivation of talents. The quality of the talent cultivation of a university depends on the level of the discipline of the university. Discipline construction provides the basis for major construction, it includes a high level of teaching staff, teaching and research base. In the actual discipline construction and major construction, team construction are involved. Although they have their own different requirements, but in many cases the allocation of resources can be considered to be shared. In order to make full use of the limited resources of school, in the process of construction, we should fully consider the difference between the three and their characteristics and adjust measures to local conditions. In this way, the discipline construction, major construction and team building can be integrated scientifically and reasonably, so as to achieve coordinated development.

Acknowledgements

This work was supported by the Ministry of Education's Cooperative Education Project (No:201701056001), Jinling Institute of Technology's Education Reform Project (No. 2017JYJG03), National Science Foundation of the Higher Education Institutions of Jiangsu Province (No. 15KJB520010), Qing Lan Project , Jiangsu Province's Natural Science Foundation (No. BK20171114), A joint prospective ndustry-University-Research Collaboration project of Jiangsu Province (No. BY2016012-02), Jinling Institute of Technology's Research Training Project (No. Jit-fhxm-201606).

References

- [1] Peihua, Gu, et al. "From CDIO to EIP-CDIO: A Probe into the Mode of Talent Cultivation in Shantou University [J]." *Research in Higher Education of Engineering* 1.1 (2008): 2-20.
- [2] QING, Wang, et al. Research on training model of the optoelectronic major university student's innovative ability under the guidance of TRIZ theory. In: *Education and Training in Optics and Photonics*. Optical Society of America, 2017. p. 104526S.
- [3] Hu, Xin, et al. "Organizational Mechanisms and Practice of Innovative Talents Cultivation in Local Colleges-A Case Study of Hubei University." *Higher Education Studies* 8.1 (2018): 65.
- [4] Zhen-Yi, WANG, XU Xue-Xia, and CHEN Xi. "Research of "1+ 3+ 4" Training Mode of Applied Innovative Accounting Talents Under the Integration of Production and Learning." *DEStech Transactions on Social Science, Education and Human Science icesd* (2017).
- [5] Jianzhong, Zha. "Strategy of Engineering Education Reform in the Era of Economic Globalization [J]." *Research in Higher Education of Engineering* 1 (2008): 007.
- [6] Zhao, Mingming, and Guangning Sui. "Research on the Construction Mechanism of Collaborative Innovation Research Platform of Private Universities." *Transactions on Edutainment XIV*. Springer, Berlin, Heidelberg, 2018. 183-193.

- [7] QI, Ping, and Jia-yong ZHU. "Strategy of Goal Adjustment and Achievement in Talent Cultivation in Applied Institutions of Higher Learning [J]." *Higher Education Forum*. Vol. 6. 2010.
- [8] Wang, Peng-Yu, et al. "Innovation of Profession-oriented Cultivation Mode for Full-time Professional Degree Postgraduates." *DEStech Transactions on Social Science, Education and Human Science mess* (2017).
- [9] Zhen-yin, H. O. N. G. "Some problems and reflections on school-enterprise in-depth cooperation in vocational education [J]." *Journal of Higher Education* 3 (2010): 010.
- [10] Jianguo, Liu. "Creative Talent Cultivation and Examination Reform in High Schools [J]." *Modern University Education* 2 (2006): 023.
- [11] Chang, Ling-Chian, and Greg C. Lee. "A team-teaching model for practicing project-based learning in high school: Collaboration between computer and discipline teachers." *Computers & Education* 55.3 (2010): 961-969.
- [12] Xiao-bin, Z. E. N. G. "Deeping Experiment and Practice Teaching Reform and Improving the Cultivation Quality of Application-oriented Talents (Continued) [J]." *Research and Exploration in Laboratory* 3 (2010): 002.
- [13] Xiang, Gao, and Mu Congjun. "On the training of interdisciplinary & application-oriented talents of foreign languages [J]." *Foreign Language World* 2 (2002): 002.
- [14] ZHANG, Shi-xian, and Yong-ping LI. "Research on the Reform of Undergraduate Application-oriented Talent Cultivation Mode [J]." *Higher Education Forum*. Vol. 10. 2010.
- [15] Hong, Lin, and Ai-jun WANG. "Reformation and Innovation of Practical Teaching in Application Oriented Undergraduate Courses [J]." *Research and Exploration in Laboratory* 9 (2004): 002.
- [16] PAN, Mao-yuan, and Ru-shan CHE. "On the positioning of application-oriented universities [J]." *Journal of Higher Education* 5 (2009): 006.
- [17] Jie, F. E. N. G. "The Problems and Countermeasures of Experimental Teaching in Innovation-Oriented Talents Training [J]." *Research and Exploration in Laboratory* 4 (2008): 23-25.
- [18] Qi, Shen, Zhang Yan, and Luo Yang. "Construction and reform of application-oriented undergraduate practice teaching system [J]." *Experimental Technology and Management* 10 (2010): 010.