

Exploration of Application Oriented Talent Training Mode of Material Science in Colleges and Universities

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Abstract. Material science has achieved more and more attention because of its singular response to the electromagnetic wave. A new application oriented talent training mode of material science in colleges and universities is studied in this paper. The new model of cultivating talents is explored, and the practical teaching system of two step education curriculum platforms is used for constructing the model. The investigation result shows that an increased learning for the student whom were more active on the platform independent on their previous performances.

1 Introduction

The rapid popularization of higher education plays an important role in providing talents for the reunification and national rejuvenation, which yet make talents cultivation, deviate from the market demand. On the one hand, the society is desperate for excellent talents while on the other hand graduation students are unable to find a job. The fundamental reason for this phenomenon is that the advanced talent training structure is unbalanced which is keen on cultivating academic talents while ignoring the cultivation of applied talents. The expansion of students' recruitment brings along with development for various universities which yet ask higher requirement [1-2]. To innovate the talent cultivation mechanism for universities is the most direct and clear requirement stipulated in Decision for higher education reform in 3rd Plenary Session of 18th CPC Central Committee which also points out the direction for development. The State Council Standing Committee meeting held by Premier of the State Council explicitly proposed to guide a series of universities to transfer to pay attention to the applied talents cultivation. Under such circumstance, the necessary path for common colleges and universities to achieve continuous development is to innovate the core competence to cultivate high quality applied talents [3-4].

General colleges and universities have to stick to the education philosophy of applied undergraduate education as well as the school operation thoughts of market-orientation, highlight employment, paying attention to quality, strengthening characteristics to come up with the talents cultivation targets of refining professions, strengthening practice and highlight characteristics [5-6].

Solid professional knowledge is the basis to cultivate applied talents and schools should obey the whole correlation of knowledge structure, and make general knowledge as guarantee to systematically grasp the professional knowledge of science and lay a foundation. The brand of school, faculty quality, subject foundation, and management experience and culture background can be powerful guarantee for students to consolidate their professional knowledge.

Paying attention to the practical ability of university students aims to acclimate the development trend of higher education and cultivate the internal quality of applied talents. The cultivation of practical ability is in accordance with the recognition regulation of university students. Education, as a recognition process should demonstrate its subject position-practice.

School characteristics are special connotations accumulated with a long-term operation. Only when sticking to the characteristics, general colleges and standards can form a brand and being competent in fierce competitive environment. Taking full advantage of the special characteristics of schools and the social demand, setting multidisciplinary specialty as well as urgently wanting specialty, teaching students according to their aptitude with classified guidance, and determining the cultivation direction based on individual personality can help to improve students' employment ability [7-8].

2 Design principles and content

Our a-priori goal was to create an active and fluid environment, wherein learners could engage with the curriculum on multiple cognitive dimensions. We implemented a points-badges-leaderboard framework, which awarded points to the users for completing tasks, and a weekly badge for exceeding a threshold number of points. The students were aware that neither the points nor the badges would have direct in fluency on their grades, but just as the conventional theoretical exercises Student-Researcher was a part of the course material in preparation for the oral exam. General education course platform is divided into general courses for whole school and general course for certain majors. General courses for whole school are public elementary courses opened for all majors while general courses of certain majors are opened for some special majors.

Adhering to the quality education philosophy, strengthening public elementary courses and basic courses, scientifically construct the knowledge structure for students and strengthening the basic knowledge as well as basic quality cultivation are necessary methods. The teaching quality assessment system can be adopted to carry out the system for teachers to take up a job through competition which can maximize the excellent teacher resources with a high sense of responsibility and good teaching effect. Besides, schools have to consolidate the basic knowledge.

Professional education course platform include professional basic course, specialized course, elective course and practice. The setting of professional basic course and specialized course should be set according to the professional features and sticks to the principle of improving students' ability. The setting for elective course should adhere to the principle of developing students' personalities based on expanding the knowledge structure. The practice should adhere to the continuous system for four years, including cognitive practice, specialized investigation, professional internships and employment practices.

Colleges and universities have to construct a stepladder-type teaching system from cultivating basic courses and specialized courses to cultivate specialized talents from the perspectives of knowledge structure, ability quality, and adaptation. Based on the target of cultivating specialized talents, basic courses should be carried out in the freshmen year while specialized courses can be carried out after stepladder year.

Divide the majors into superior majors and common majors to carry out distribute training. Superior majors are brands of school which have created a stable and good pattern in terms of recruiting, training, and employment. Common majors can take advantage of superior majors to positively develop interdisciplinary courses with independent settings. It takes employment as the direction, focusing on reforming the teaching plan arrangement and launching cross-disciplinary special courses, allowing interdisciplinary education, paying attention to the comprehensive integration of knowledge to break the major barriers.

3 Results and Discussion

Adhere to implement the teaching approach based on internal class teaching and out of class activities so as to realize open practice teaching, encourage students to study independently, fully mobilize the enthusiasm and initiative of students. What's more, schools can develop expanded and flexible cultivation models such as academic competitions, community Club, school and enterprise Alliance, industry research, scientific research innovation and students can be granted with quality grades and the main contents as well as approaches show as follows:

Encourage teachers and students to actively participate in influential professional skills contest to cultivate students' competitiveness, develop their expertise. Through participation in academic competitions, their learning, practical and innovative ability can be improved. Figure 1 shows the cultivation model for applied talents.

Actively promote the development of students' professional associations, and guide students to develop professional and innovative activities which can develop their abundant skills, team spirit as well as leadership skills and practice innovation skills a variety of Club activities, develop students' professional skills, teamwork and leadership skills.

The alliance can help to train applied talents, who can take the initiative to adapt the changing social needs. The working experience via alliance can help students learn the production model, and running philosophy of enterprises, which can also help them establish cooperation relation with enterprises and is beneficial for their employment after graduation.

Organize students to design questionnaire, survey, data analysis and write articles to help them fully understand their professions too scientifically and correctly plan for the future. Schools should encourage students to independently carry out research activities or actively participate in teachers' scientific research project, regularly organize students to apply for research report and support them on excellent projects. What's more, schools have to regularly hold exchanges meetings in terms of graduate entrance exam, scientific research innovation and research project application. As a result, students can innovate their thinking ability after referring to literature, improve their practical ability while participating in experiment which are beneficial for employment.

Launch series rules and regulations to standardize the school teaching and management. Students are encouraged to participate in various skill training classes, specialty classes, professional skill competition to carry out innovation and entrepreneurship. Besides, capitals should be appropriated to encourage and award excellent students and tutors.

Build a dynamic teaching team dominated by full-time teachers supplemented by part-time teachers. Besides, these teachers have proper age, education background and title structure. Moreover, teachers can be assigned to cooperative enterprises to be trained, professional skill training can be carried out and enterprise managers with abundant working experience can be recruited so as to optimize the faculty structure.

Construct a multifaceted, three-dimensional and connected information platform for teaching so as to realize the modernization of teaching management means. While taking advantage of comprehensive resources such as education funds, time, information, and teaching condition the regulated management for teaching management activities also provides guarantees. Establish three-level teaching quality supervision organization made up of school, dean’s office and college. In each term, supervised teacher will randomly evaluate the teaching quality, which can be also assessed based on student evaluation and feedback so as to assess the teaching quality.

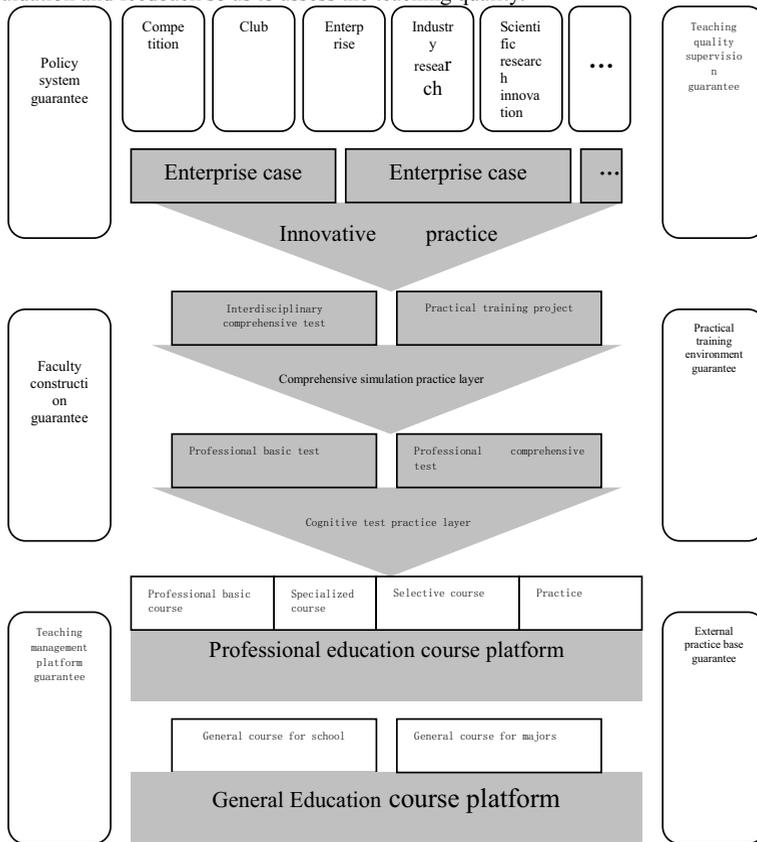


Fig. 1. The cultivation model for applied talents.

Increase education funds; actively promote the hardware environment construction for experiment and training. In spare time, laboratories are open and experiments can be carried out on weekends or in the evening. At the same time, special lectures can be conducted to stimulate students’ enthusiasm. The excellent experimental training environment provides good conditions for teachers’ teaching and scientific research as well as innovative practice for students. Establishing talent cultivation mechanism with enterprises to innovate internship model, provide scientific service, deliver talents, combine production, teaching and research, provide professional training can greatly improve students’ practical, innovative and entrepreneurship capacity.

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