ISSN : 0974 - 7435 Volume 10 Issue 23

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(23), 2014 [14549-14552]

Research on machinery major innovation and entrepreneurship practice base

Qiulei Du[1], Liai Pan[1]*, Zixuan Cheng[2]

[1]Changchun University, Changchun, Jilin, 130022, (CHINA)

[2]Institute of Automation, Chinese Academy of Sciences, Beijing, 100190, (CHINA)

E-mail : panli636@126.com

ABSTRACT

Based on undergraduates of mechanical major, this paper expounds specific content of innovation and entrepreneurship base construction for mechanical major students, starting from analysis of the purpose and significance of innovation and entrepreneurship practice base. The content includes the optimization of innovation and entrepreneurship curriculum, practice of teaching team construction, improvement of innovation and entrepreneurship base management system, construction of hardware platform and integration of internal and external school resources. The construction of practice teaching base for innovation and entrepreneurship should be strengthened, which is needed by school development, by educational development and by the times as well.

KEYWORDS

Machinery major; Innovation and entrepreneurship; Practice base.

INTRODUCTION

In the past 20 years, building an innovative entrepreneurship education and innovation base has increasingly become one of the mainstream development international education concepts, and there are some international institutions relying on innovation and entrepreneurial success in transforming project results into social productivity. Some countries put cultivating high-quality innovative talents as ideas and direction of education reform, strive to develop students 'creative ability through various ways and forms, and develop students' practical ability of innovation and entrepreneurship through innovative entrepreneurial base platform. There are over 50 universities in United States to set up innovation and entrepreneurship research institutions, research innovation base construction of innovation and entrepreneurship education, and have gradually formed a far more scientific and perfect system. Nowadays with the popularization of higher education development, college graduates in employment are under great pressure and they find themselves unable to meet the market demand. There are many R & D managers in market craving innovation and technological talents with capabilities and skills, which attracts colleges' attention, forcing transition to innovation and entrepreneurship university education to be necessity. Therefore to create a base for innovation and entrepreneurship in universities is a key step in the success of innovation and entrepreneurship education.

PURPOSE AND SIGNIFICANCE OF INNOVATION AND ENTREPRENEURSHIP PRACTICE BASE CONSTRUCTION

Practice is the source of innovation. In innovation and entrepreneurship for university practice base construction, training and research and development capabilities with a certain job skills and innovative talents, which are national competitiveness, social progress and productivity gains necessary requirements. With the popularization of higher education continues development, universities addition to cultivating innovative talents, but also should have the technological innovation, the functions of radiation to community knowledge and technological achievements. Mechanical engineering disciplines of science as one of the pillars of national construction and social development, but should focus on innovative practice and practice construction and development projects achievements. Practical significance innovation base construction is that it can provide a theory with actual practice platform for mechanical engineering students. students through practical exercises on the project and the transformation process of the project, can greatly improve their ability of engineering practice and professionalism while school personnel training, innovative research, the results of industrialization in three areas to get a better integration of the sustainable development of the school has a great significance.

CONTENT RESEARCH OF INNOVATION BASE CONSTRUCTION

(1) Optimization of innovation and entrepreneurship curriculum system

Mechanical Specialty innovation and entrepreneurship curriculum system and teaching aspects of the design, the first is to carry their own educational philosophy and universities, the professional education with a combination of innovation and entrepreneurship education, while students a solid foundation of professional knowledge and training students' comprehensive application ability and discipline between mastery of skills. Innovation and entrepreneurship curriculum system is set up very good-looking aspects of Babson College, to meet the needs of society, according to a senior undergraduate freshman different needs Babson College, and the ability to handle different knowledge, the college has designed a line with student awareness courses, from shallow to deep, step by step[1]. Babson College undergraduate curriculum innovation and entrepreneurship is shown in TABLE 1.

TABLE 1 : Babson college undergraduate curriculum of innovation and entrepreneurship

First Year	Second Year	Third Year	Fourth Year
Required Courses	Required Courses	Required Courses	Required Courses
Innovation and entrepreneurship course experience for freshman	Acceleration of entrepreneurship courses	Creating entrepreneurship, corporate finance, business plans, home management mechanism, venture capital and capital appreciatio	Corporating entrepreneurship, entrepreneurial real case studies, entrepreneurs marketing, strategy and structure

Seen from the above table, curriculum system set has been integrated into traditional curriculum, combination of practical aspects of the course each semester, such as business plan competition, entrepreneurship lectures, so that students from obtaining entrepreneurial experience. This is a good example. In this regard, we need to optimize compliance with reasonable mechanical major innovation and entrepreneurship curriculum, teaching the use of existing school resources to improve the ability of mechanical engineering students application-oriented, in accordance with the laws of cognition, focusing on training of students' creative thinking and entrepreneurial potential of development. Specialized additional terms such as innovative mechanical design, creating learning, thinking methodology entrepreneurial class curriculum, and students

have a sense of divergent thinking, enhance student awareness of innovation. Increase of curriculum design operating software training 3D MAX, CATIA, Rhino, RecurDyn and other three-dimensional modeling and simulation class, increase combat-type training curriculum design and the addition of some entrepreneurial class projects, such as college innovation and entrepreneurship contest, collegiate business plan competition, etc.,. It will be effective innovation and entrepreneurship in knowledge, the results of design into business process, giving students the opportunity to learn to identify business opportunities, business growth study, financing and other risks with basic knowledge and combat skills. This process will give student brings a wealth of practical experience, which is their future career or their own independent business, is undoubtedly a great asset.

(2) Team building practice of teaching

In practice of design of innovation and entrepreneurship, though teachers are not main project, but they are the indeed backbone. Thus in innovation and entrepreneurship education, teachers have a complete knowledge of structure and a wealth of practical experience, particularly capable commander global, and ability to inspire their students' creativity. Mechanical innovation base class professional team composed of teachers should be involved in several areas, where employment guidance teachers, mechanical full-time teachers, teachers, and other related professional fields composed of engineers and other technical innovation and entrepreneurship education team. Meanwhile, school team should plan a way for teacher training, academic exchanges and opportunities for research to fight out, so that teachers can communicate with domestic counterparts innovative learning experiences, actively communicate with enterprise to build a base for establishment of schools and enterprises, sending some teachers, especially from school to school-educated young teachers, go to enterprise engineering practice, asking them to truly participate in enterprise projects, learn from planning, research and development to the whole process of project implementation, so that team of teachers the ability to engineering practice, design, innovation awareness, innovative thinking, entrepreneurial guidance, comprehensive training and capacity increase[2], and gradually form a team capable, reasonable structure, excellent quality, noble morality of innovation and entrepreneurship practice teaching team.

(3) Gradual construction of wide innovation base management system

No rules no standards. Management is basic element to make specific projects able to implement and get success[3]. Mechanical engineering innovation base management practices and policies need a dedicated innovation base office staff to discuss continuous improvement. Office members consist of school leaders, teachers, and mechanical specialty professional teachers of related fields. To gradually improve and perfect innovation base management model can give foster creative talents to provide a better environment for beneficial activities on students' innovation and entrepreneurship.

a) Student Management

In order to ensure the quality of design innovation base project, voluntary enrollment of students need basis of merit, by completing the appropriate stage of training, they can choose to continue to the next level or to exit. After students participate in activities and receive assessment, they should be issued certificate or a certificate to participate in activities by the base to complete project better and innovation can give appropriate credit for encouragement.

b) Management of science and technology activities

Innovation and entrepreneurship projects should be prepared based on instructors' own characteristics or by students themselves, where they need fill application form for innovation and entrepreneurship project subject, hand in it to base office and base instructor and technical engineers will collective decision to declare the project's feasibility. Students participating in project team need form 3-5 combination, together with project design instructor. For funding activities required in accordance with uniform procedures apply to innovation base, recommend innovative projects to participate in various competitions. If some member can not complete projects or tasks on time, instructor will be entitled to terminate the project or the instructor can quit the team.

c) Establishment of innovation and entrepreneurship funds and reward system

Firstly, the establishment of credit reward system is needed. The school should base the design and development of innovation and entrepreneurship projects directly linked with its own credit, in order to urge students to actively participate in innovation and entrepreneurial activities. Secondly, the establishment of special fund for innovation and entrepreneurship is necessary. Fund is used to finance research and innovation activities and students to carry out a business plan, support and organize students to participate in extracurricular academic influential national science and technology competitions, in recognition of outstanding individual and collective student academic technological innovation activities, reward outstanding academic achievements of students in science and technology. School should create conditions to support the transfer and development of promising scientific and technological application achievements[4]. This not only is beneficial to encourage students to engage in scientific and technological development and promotion work, but helps students continue learning and employment so as to stimulate their enthusiasm for innovation.

(4) Construction of base hardware platform

In addition to the above content of innovation and entrepreneurship base construction, it is a very important aspect to equip the base with hardware facilities. We deeply feel that technological innovation is not only to open several laboratories, but requires sophisticated laboratory equipment and adequate training site in order to better carry out implementation of scientific and technological innovation projects. In this regard, the school where the author attaches has put great importance to construction and upgrading training base experimental equipment. Currently, the school has 2,000 square meters of engineering training center training venues and open experimental center for students to simulate operation, and with dozens of leading laboratory equipment for student use, such as UNIMAT tools, three-dimensional rapid prototyping machine, three-dimensional scanner, flexible manufacturing laboratory equipment and numerical control machine tools. With the constant improvement of base construction, the school will continue to provide facilities according to actual needs of base or laboratory with all kinds of sophisticated equipment to enable innovation and entrepreneurship practice base as complete hardware facilities for students and teachers to provide more effective guidance backing.

(5) Integration of internal and external school resources

The process of innovation and entrepreneurship education is from theory to practice and then to theory, so it has a very strong social practicality. This determines that it should leave the campus to seek a wide range of social resources together to complete the whole process of innovation and entrepreneurship education on the basis of school education. Therefore, the construction of innovation base should focus on the integration of internal and external resources, innovation and entrepreneurship education for students to build a broader stage[2]. There are many ways to strengthen the integration as follows: to actively expand cooperation channels between universities and enterprises, to encourage participation in construction of social resources through investment and shares, to establish college-enterprise-connected laboratories, outside experiments and practice base for students to provide a good learning and testing environment and to achieve the theoretical with practice and innovation, curricular and extracurricular, school and society combine modes. In this regard, the school the author of this paper works to jointly develop students' practical ability together with China First Automobile Works. During the junior year, students of mechanical major, have one-month internship training on production line of the factory. In school, students have one month metalworking, student internships plant in the operation of various cars, pliers, washing, planing equipment. These training and practical operation of engineering practice allows students the ability to have substantial increase in jobs and to lay a solid foundation.

CONCLUSIONS

Innovation and entrepreneurship practice base construction for machinery major students is a systematic and complex project, which requires development and practice in constant exploration. It involves teaching model reform, technological innovation, training of personnel in many aspects, but also a series of questions related to student employment, campus culture construction. Therefore, strengthening the construction of innovation and entrepreneurship practice teaching base, the establishment of a stable counterpart internship base, to emphasize the quality and practice of cultivating students' innovative ability is particularly important in practice teaching session. Students can greatly improve their ability and professional quality engineering practice through exercises in innovation and entrepreneurship training base, and they can lay a good foundation for future business and employment. Innovation and entrepreneurship practice base is what good school development needs, and what education needs for development is also needed by development of the times.

ACKNOWLEDGEMENT

Fund Project: Jilin Education Science Twelfth Five-Year Plan 2014 project Research and Transformation to build innovation and entrepreneurship practice platform for machinery major students, (project number: GH14242) This paper is one of the stage researches.

REFERENCES

[1] Tao Hu, Li Shen; Foreign innovation and entrepreneurship education model for enlightenment Chinese Universities [J]. Chinese University Teaching, **91**, **(2013)**.

[2] Tao Li; Relationship between innovation base construction and innovation entrepreneurship education [J]. Technological Wizard, **144**, **(2012)**.

[3] Yan Yang, Zhiqiang Ai, Yuanjun Shen; Discussion on university student innovation base construction[J]. Journal of Liaoning University of Technology (Social Science Edition), **59**, **(2013)**.

[4] Changgeng Li, Xiongfei Liu, Xiaochun Li; Construct platform for innovation and entrepreneurship to improve innovation and entrepreneurship capability of university students [J]. Electrical & Electronic Education, **12**, **(2007)**.