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Research Article

Cultivation of Innovators and Entrepreneurs in Colleges and Universities in "Internet+" Era*

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Abstract

With the advent of the "Internet +" era, the cultivation of college students faces many challenges as well as new opportunities. In view of the relatively weak Internet awareness of college graduates and insufficient practical and innovative abilities, this paper put forward the innovation and entrepreneurship-oriented cultivation model for college students to train their technical practice and innovative ability and comprehensively improve the practical ability of graduates. The industry-university-research integration enables college students to be exposed to the work content and operation mode of enterprises in advance so as to enhance the innovative and entrepreneurial ability of college students in an all-round way. The method proposed in this paper, implemented in a university in Sichuan, has greatly improved the entrepreneurial rate of graduates under this training mode and brought high recognition of enterprises for graduates' innovative and practical ability.

Keywords

Internet+ • Innovation and Entrepreneurship • The Industry-University-Research Integration • Practical Ability

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In the Internet+ era, all economic and social aspects have been changed and demand increasing Internet talents. With numerous business opportunities behind, all sectors are aware of the profound impact of the Internet on future economic development and technological progress (Pedersen, 2005). Therefore, the innovation and entrepreneurship in the Internet+ context has been highly valued by the country. At the 2014 Davos Forum, Li Keqiang proposed to launch mass entrepreneurship innovation in China. In 2015, the Standing Committee of the State Council passed the "Government Work Report" and established the Inter-Ministerial Joint Conference System for Mass Entrepreneurship and Innovation, led by the Development and Reform Commission. The statistical results show that China's Internet market exceeded 15 trillion RMB in 2014 and reached 21 trillion RMB by 2017 within three years.

Table 1
Internet + Gross

Year	Gross (billion)	Related Gross (billion)
2014	1523	840
2015	1732	915
2016	1967	1023
2017	2145	1201

As the institutions for application-oriented technical talent cultivation, universities are mainly responsible for the training of "Internet+" innovative and entrepreneurial talents. However, traditional college teaching is more about the knowledge impartation. In the context of the vigorous development of innovation and entrepreneurship in China, colleges and universities are required to focus on not only theoretical knowledge but also students' practical ability. As the Internet+ trend is newly emerging, the college teaching is still in the beginning stage for exploration and mostly cannot meet the needs of innovative and entrepreneurial talents, which has brought unfavorable factors for the cultivation of practical and innovative talents needed by the society (Lynch, 2008). This paper analyzed the status quo of computer innovation and entrepreneurship training, and elaborated the methods of cultivation of excellent Internet+ talents from the perspectives of Internet+, the core needs of enterprises and teaching practice of colleges and universities, so as to cultivate the competitiveness of innovative and entrepreneurial talents in colleges and universities.

The Status Quo of Internet Talent Training

Out-dated Teaching Contents

The domestic universities are relatively traditional in the education mode, and fail to change adjust disciplines closely with the fast-changing demands of talents in society and the market. However, with the rapid explosion of Internet in China as a basic tool, the information transmission on the Internet has been quickly attached to traditional industries and profoundly changed the traditional industry chain. At the same time, it has put forward new demands for talents' innovation ability, resource integration ability, communication ability and learning ability, and has spawned several emerging industries such as Internet finance, O2O, big data, and artificial intelligence (Emekter, Tu, Jirasakuldech & Lu, 2015) that require a large number of innovative and entrepreneurial talents. However, the innovation and entrepreneurship training in recent years saw low

integration with college education and did not penetrate enterprises and social organizations. At present, the innovation and entrepreneurship trainings in colleges and universities are not mainstream professional courses with superficial contents, and teachers fail to give serious response in class. Additionally, there are few teachers with high professionalism. All these make it difficult to stimulate students' enthusiasm for innovation and entrepreneurship, and result in a vicious circle of perfunctory attitudes between teachers and students in the long run.

Weak Innovation and Entrepreneurial Awareness

In developed countries such as Europe and the United States, the proportion of entrepreneur college students is relatively high, such as 15% in the US, represented by Zuckerberg and Bill Gates. However, only a small proportion of Chinese college students choose to start a business after graduation, namely 5%, of which a considerable part is out of passive choice after failure to find a job (Feld & Ramsinghani, 2014). The weak awareness of innovation and entrepreneurship of college students in China is closely related to the family environment. In China, the talent training model pays more attention to the individual "screw" spirit, a modest method without individualized training. The innovation and entrepreneurial activities organized by colleges and universities are even rare, and cannot penetrate professional courses and the cultivation of talents. Thus, innovation and entrepreneurship activities in colleges and universities have become disconnected from the social needs and cannot truly cultivate the students' innovative and entrepreneurial ability. On the other hand, Chinese college students can hardly bear failures. Most families hope that their children could find stable jobs after graduation, and hold negative attitudes towards entrepreneurship risks. In general, family and college education in China invest little in the innovation and entrepreneurship, which leads to the unclear goal of the innovation and entrepreneurship education, the inability to form a talent training mechanism, and the failure to inspire students' innovative thinking and potential (Bania, Eberts & Fogarty, 1993).

Lack of Innovation and Entrepreneurial Environment

In the university, some students have already initiated the idea of entrepreneurship and innovation. However, Chinese universities lack an incubation platform such as an entrepreneurial base to offer support. The most significant problem is the lack of financial support. Many college students who choose to innovate and start a business, even if they have excellent entrepreneurial projects and plans, can hardly succeed with insufficient start-up capital and experience (Lee, 2014). The insufficient funds are mainly due to the lack of stable financial resources for college students. The funds in the early stage of entrepreneurship mainly come from the sponsorship by parents or borrowing from friends or even campus loans that are usually relatively in a small amount. Funds that are raised by financing and other channels are in extremely low proportion. However, innovation and entrepreneurship pose relatively high requirements for the capital chain. Many college students will encounter such a problem in the process of starting a business and cannot guarantee the follow-up funds, resulting in the inability of normal business operations of startups or even breakdown. In addition, newly graduated college students, without enough entrepreneurship trainings and social experience, usually

underestimate the difficulties in starting a business and lack a deep understanding of the status quo of the industry. They rely more on the ambition and enthusiasm for innovation at the beginning of the venture to grow their own projects, and cannot effectively handle multi-party relations with insufficient crisis management and problem-solving capabilities in the fierce market competition and complicated interpersonal relations and intertwined interests. All these factors have seriously restricted the success rate of college students' innovation and entrepreneurship (Dean & Giglierano, 2005).

The Industry-university-research Model for Innovation and Entrepreneurial Talent Cultivation

Based on the above problems, this paper proposed a teaching model based on the industry-university-research teaching model to alleviate the lack of talents. The model is elaborated in the following three aspects.

Optimize the Content of Professional Courses

In the promotion of the industry-university-research model, textbooks of each subject needs to maintain a high update frequency to keep pace with the times. In teaching, it is necessary to improve the proportion of practice in the curriculum design, guide the teaching with actual tasks of enterprises with practical work as the orientation, and even invite businessmen and entrepreneurs to form a curriculum design committee to realize the transformation from the single professional education to the "generalist + innovator" education and from a practice-apart theoretical education to "practice + innovative" education (Au & Kwan, 2010). Regarding selection of teaching materials, the professional basic courses and professional core courses should be strengthened. The former develops students' professional basic skills, while the latter requires the introduction of the latest theoretical and practical achievements of the international academic community in recent years to replace the obsolete knowledge points and keep pace with the times. Also, the proportion of practical courses should be increased for students to lay a solid foundation for the industry-university practices for students (Oechslein & Tumasjan, 2012).

In the course design and teaching evaluation system, the proportion of off-campus practice should be increased (Tremblay, 2005). The main goal of the off-campus practice is to enable students to get in touch with enterprises, understand the way the company operates, identify the learning objectives, know the work responsibilities in the future, and better integrate Internet+ thinking into their own learning. While students participate in the actual operation of the enterprise, excellent enterprise employees can also be invited to give detailed guidance to the students from the current market demand, innovative methods, professional requirements and other aspects. At the same time, an evaluation system for off-campus practice should be established to enable enterprises to score and guide students. Though weekly or half-month feedback on the actual situation of students to universities, teachers can track the performance and improvement of students in the first time and take corresponding measures. Additionally, teachers should strengthen the in-class training to keep pace with the times. In the context of Internet+, teachers can initiate competition-oriented trainings and

hold regular competitions every year by university or school to fully mobilize students' practical ability and innovative awareness. Moreover, multiple students can be encouraged to form a group spontaneously to complete the case and participate in the competition, realizing the improvement of students' actual innovative and entrepreneurial ability in the form of competitions.

Faculty Training

As mentioned above, the faculty of colleges and universities lacks certain innovation and entrepreneurship training, which leads to their own weak knowledge accumulation in the two aspects and shallow understanding of the industry-university-research model. Therefore, the training of teachers in colleges and universities also needs to take into account the industry-university-research model. Especially for the industry-university-research integration, teachers need to change their ideas and construct the teaching system according to practical innovation and break through the traditional teaching mode. Specific measures can be seen as follows. 1) Urge teachers to encourage students to participate in national competitions such as the Challenge Cup Entrepreneurship Competition, to train their ability to solve practical problems in practical cases. 2) Cultivate a special internship tutor as the person in charge of the internship of the student to the company every year, and improve the effect of the internship through the years of experience. 3) In the form of full-time and part-time work, some technicians or managers with strong ability in the industry can be invited to teach at the school or give lectures to promote the improvement of the innovative and entrepreneurial ability of students and the teachers' knowledge. 4) Encourage a group of outstanding teachers to visit advanced enterprises or academic institutions at home and abroad for further study and exchange, and bring advanced overseas teaching methods and concepts back to the university.

Create A High-quality Industry-university-research Base

The core content of the industry-university-research collaboration is to provide students with a good premise for innovation and entrepreneurship. The long-term stable practice base is the best choice. Universities can develop the industry-university-research base in various forms, such as cooperation with the government. Universities and enterprises can jointly fund the premise construction and set up school-run factories. In the process of implementation, college teachers sign contracts with enterprises to further convert the commercial benefits of the industry-university-research fruits into base operating funds and realize the smooth operation of the industry-university-research base. The training content needs to be targeted and comprehensive. The training base needs to include all aspects of the major so that students can find internship that fits their professional direction. At the same time, the industry-university-research base should also be open to the social enterprises. It will bring employment opportunities to students and additional benefits such as rent to the base.

In addition to the base, we can also create a variety of models. For example, the studio system relies on enterprises or companies to help competent students and social employees to establish studio incubation projects. In this studio model, students, once entering the studio, serve as the company's employees in advance, and the studio can also obtain more cost-effective labor costs. This model achieves zero distance between

teaching and work, and can further stimulate students' interest in learning and entrepreneurial awareness. In addition, an order form can be established in the internship base, so that the college can sign an order contract according to the requirements of the enterprise for talents. Colleges will take the lead in organizing the recruitment of students to complete the outsourcing project of enterprises as part-time. This model can effectively target the needs of enterprises and enable students to personally understand the specific needs of the large enterprises through the completion of the order directly, so as to improve their initiative and enthusiasm and reduce the training period after the students join enterprises for work.

Effect Analysis

The model proposed in this paper was applied to a university in Sichuan Province. The university rebuilt an abandoned campus-run factory in the campus and established an industry-university-research integrated training base that is equipped with an incubator garden, a studio, and a campus-run enterprise. They are mainly responsible for supporting the development of research projects, transforming research projects into technological inventions or actual products, and providing seed technology and technical support. The industry-university-research base developed for faculty, students and experts can accommodate 300 people at the same time. The actual results prove that the model realizes the complement of advantages and resources, and has successfully hatched many featured projects each year. The industry-university-research base was completed in 2015. After being put into use, it has greatly improved the student's entrepreneurship rate and the number of patents per year, and significantly raise the evaluation on graduates' innovation ability by enterprises.

Table 2
Rate of Start Up

	2014	2015	2016
Rate of in-school startup	4.7%	9.3%	12.1%
Rate of graduate startup	5.6%	14.3%	16.2%
Patent	423/year	765/year	862/year

Conclusion

The advent of the Internet+ era has brought new opportunities to the cultivation of college students and many challenges to universities. Due to historical reasons, college graduates have weaker ability in innovation and entrepreneurship, and universities are lacking in the investment in innovation and entrepreneurship education. Based on an in-depth analysis of the existing innovation and entrepreneurship education in China, this paper proposed the innovation and entrepreneurship-oriented industry-university-research model with the cultivation of technical practice and innovative ability as the direction and the comprehensive improvement of graduates' practical ability as the objective. In this model, college students will enter the incubator base for internship, and comprehensively enhance their innovative and entrepreneurial ability. The model proposed in this paper was implemented in a university in Sichuan. The results show that the entrepreneurial rate of graduates in this training mode has been significantly improved, and their innovative and practical ability has also been highly recognized by enterprises.

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