Survey on Present Situation and Policy Suggestion of Innovation-entrepreneurship Education in Universities of the Northwest China

Hai-yan DONG¹,².*, Jian-ming DOU³ and You-peng ZHANG¹,²

¹School of Automation & Electrical Engineering, Lanzhou Jiao Tong University, Lanzhou, China
²Rail Transit Electrical Automation Engineering Laboratory of Gansu Province (Lanzhou Jiao Tong University), Lanzhou, China
³Lanzhou Institute of technology, Lanzhou, China

*Corresponding author

Keywords: Innovation-entrepreneurship education, Universities of the Northwest China, Sample survey, Policy suggestion.

Abstract. In this paper, a sample survey is conducted on the present situation of innovation-entrepreneurship education of thirteen universities in Gansu province through questionnaire and personal interview. The survey includes three aspects, which are undergraduate basic situation, undergraduates' willingness to innovation-entrepreneurship, and the present situation of implementation of innovation-entrepreneurship education in universities. According to the conclusion of this survey, we propose to extend innovation-entrepreneurship education to primary and secondary education, to establish the position of innovation-entrepreneurship in subjects, to diversify the practice of innovation-entrepreneurship, to unite government, schools and social institutions together to promote the development of innovation-entrepreneurship education, to explore the development path of innovation-entrepreneurship education according to new and old universities’ own characteristics and so on, which enhance the quality of innovation-entrepreneurship education in the less developed areas.

Introduction

Innovation-entrepreneurship education is a transformation of educational philosophy for cultivating innovative talents in universities. It is "the third educational pass" besides general education and vocational education. The development of innovation-entrepreneurship education in developed countries has gone through more than 70 years from Myles•Mace sets up the first entrepreneurship education curriculum in 1947. Some countries adopt various policies and measures to carry out innovation-entrepreneurship education, such as the United States, Japan, Germany, Britain and so on. These countries have formed a relatively complete system of education, and innovation-entrepreneurship has become one of the key forces driving economic and social development, for example, HP, Google, YAHOO, CISCO, SUN and other high-tech companies were born in the campus atmosphere of innovation-entrepreneurship of Standford University [1,2].

There is a big gap between China and the developed countries in the innovation-entrepreneurship education, we are far behind them, the main reasons are the differences of the ideas and institutions formed by the historical and cultural traditions, and the differences of market demand formed by the different levels of social and economic development. With the rapid development of our society and economy, the awareness of innovation-entrepreneurship has been unprecedentedly active, and innovation-entrepreneurship have gradually become an important driving force for the development of society and economy. China's colleges and universities began to gradually develop innovative and entrepreneurial education in 90s twentieth Century. In 2007, the Ministry of education put forward a request that colleges and universities should attach importance to the cultivation of undergraduates’ innovative ability and spirit. Subsequently, the attempt to reform the training model of talent was
advocated and the **basic requirements for the teaching of entrepreneurship education in ordinary universities** were issued. Especially in 2015, the innovation-entrepreneurship education in Chinese universities was promoted to a new height, because the announcement of the **opinions of the general office of the state council on deepening the implementation of innovation-entrepreneurship education reform in universities** [3,4]. In this situation, All regions strengthen the reform of innovation-entrepreneurship education. However, there are great differences in the concept and practice level of innovation-entrepreneurship between different regions, where the southeast areas are significantly higher than the central and western regions, because its economic development level is better, and its educational resources are richer [5,6,7]. This paper surveys the current situation of innovation-entrepreneurship education in Gansu's universities, analyzes what problems existing of that, and puts forward countermeasures to improve the level of innovation-entrepreneurship education in underdeveloped areas.

**Methodology**

The present situation of innovation-entrepreneurship education is mainly reflected by two aspects, one is undergraduate actions of innovation-entrepreneurship, which include the consciousness and practice of innovation-entrepreneurship, the other is the theory and practice teaching process of cultivating undergraduate innovative and entrepreneurial ability, which is mainly composed by subject orientation, course setting, teaching means and teachers' strength. The method of questionnaire survey and expert interview were adopted to fully reflect the elements mentioned above. The 12 problems are set up to obtain the basic situation of the surveyed undergraduates includes the subject and grade, the undergraduate willingness to start a business mainly includes the planning of entrepreneurship, the concerns of engaging in business and the desire for employment, the situation of developing innovation-entrepreneurship education includes courses, practice and cases for it. The experts, who are the responsible person for innovation-entrepreneurship in some universities, were interviewed as a supplement to the questionnaire survey.

| The composition of the subject | Grade distribution of undergraduates |
|-------------------------------|-------------------------------------|
| Subject | Science | Engineering | Liberal arts | Freshman | Sophomore | Junior | Senior |
| Proportion[%] | 30 | 37 | 33 | 10 | 35 | 32 | 23 |

The survey selected 13 universities, Northwest Normal University(NNU), Lanzhou University of Technology(LUT), LanZhou Jiaotong University(LJU), Gansu Agricultural University(GAU), Lanzhou University of Finance and Economics(LUFE), Gansu Political Science and Law Institute(GPSLI), Lanzhou City University(LCU), LanZhou Institute of Technology(LZIT), Lanzhou University of Arts and Sciences(LUAS), Lanzhou Jiaotong University Bowen College(LJUBC), Zhixing College of Northwest Normal University(ZCNNU), Longqiao College of Lanzhou University of Finance and Economics(LCLUFE) and College of Technology and Engineering, LUT(CTELUT), accounting for 68.4% of the provincial universities. The questionnaire was distributed randomly, 50 copies of each school, 636 valid questionnaires were returned, and the recovery rate was 97.8%. The basic situation of the effective questionnaire is shown in Table 1.

**Results and Discussion**

**Entrepreneurial Intention**

The intention of innovation-entrepreneurship is the basis for carrying out innovation-entrepreneurship education. There are specific groups of people suitable for innovation-entrepreneurship rather than all. Those people are more likely to cultivate innovative and entrepreneurial spirit. Therefore, universities should carry out innovation-entrepreneurship education according to the wishes of the undergraduates, and theirs employment intention also can reflects the effectiveness of innovation-entrepreneurship education in a certain extent. In this study, three
subjects were selected as the observation points of undergraduate innovative and entrepreneurial behaviors, entrepreneurial willingness, employment intention and the main factors leading to failure of entrepreneurship as shown in Table 2. From the surveyed undergraduate entrepreneurial intentions, 56% and 30% of the undergraduates were strong and moderate respectively, while the weak ones accounted for 14%. This indicates that there is a deep ideological foundation for implementing innovation-entrepreneurship education. However, only 18% of undergraduates choose to do entrepreneurship, and other employment intentions were listed from strong to weak are state-owned enterprises, public institutions, private enterprises and civil servants. The undergraduates accounted for 65% of all still tend to choose the traditional “stable occupation”, which is limited by lack of experience, funds, knowledge and platform of innovation-entrepreneurship.

The main reasons for the huge gap between high entrepreneurial willingness (86%) and low choosing entrepreneurship after graduation (18%) are as follows: Firstly, Gansu province is located in the northwest inland, with backward economy and conservative thinking, so a good environment about innovation-entrepreneurship didn’t be formed, so innovation-entrepreneurship activities didn’t be understood and supported. Secondly, undergraduate entrepreneurial activities are restricted by many factors such as entrepreneurial experience, financial support, government’ policy and so on, so they have to temporarily abandon entrepreneurship.

| Option | Ratio [%] | Grade | Employment intention | Ratio [%] | Main factors leading to failure of entrepreneurship | Ratio [%] |
|--------|-----------|-------|----------------------|-----------|-----------------------------------------------|-----------|
| Only professional education be accepted. | 14 | Weak | Civil servants | 10 | The limited experience and funds | 23 |
| Entrepreneurship is one of the career goals. | 48 | Moderate | Public institutions | 23 | The lack of entrepreneurial knowledge | 18 |
| | | | State-owned enterprises | 32 | The lack of entrepreneurial platform. | 13 |
| Work experience should be accumulated before starting a business. | 8 | Moderate | Private enterprises | 17 | It's hard to make a choice between professional and entrepreneurial | 12 |
| | | | Entrepreneurship | 18 | I don't know how to start a business at all. | 10 |
| I'm doing a business plan. | 25 | Strong | - | - | The risk is too big to bear. | 10 |
| I'm already starting a business. | 5 | - | - | No interest in entrepreneurship. | 14 |

The Effect of Carrying out Innovation-entrepreneurship Education

The innovation-entrepreneurship education is mainly composed of courses and practical teaching. Innovation-entrepreneurship courses mainly include innovative and entrepreneurship courses. Practice teaching mainly includes case teaching, innovation-entrepreneurship competition, simulation business, school enterprise cooperation and so on. In this paper, three topics are set up to reflect the source of the undergraduate knowledge of innovation-entrepreneurship and the undergraduate participation in the innovation-entrepreneurship competition.

The way of understanding innovation-entrepreneurship comes from courses account for 40%, social practice account for 25%, innovative entrepreneurship projects and competitions account for 15%, and other ways account for 20%. Generally speaking, innovation-entrepreneurship projects and competitions have played a certain role in enhancing and publicizing functions, but undergraduate participation is not high. The challenge cup, as a undergraduate extracurricular academic and technological works competition, is the most influential competition in the university campus, its participation is only 8%, and other competitions are no more than 20%.

Expert interviews shows that the discipline orientation of innovation-entrepreneurship in universities is not clear. Innovation-entrepreneurship education is regarded as a public elective course,
or is attached to professional knowledge teaching, and there are many phenomena of setting up the curriculum according to the teacher, such as "professional introduction", "career guidance for college undergraduates", "career planning of college undergraduates", "enterprise management" and so on.

At present, innovation-entrepreneurship education has not been improved to the level of professional education. Therefore, there is rarely a case of obtaining a diploma with the same treatment as a professional education for the success of a business. Under the undefined orientation of the subject, the curriculum system of innovation-entrepreneurship education is imperfect and lack of practical exercises. Even in the course of classroom teaching, the teaching teachers are most of the theoretical teaching type without practical experience. In addition, the practice teaching method is single, mainly using competition and project as training means, but there is no follow-up measure after the end of the project or competition, resulting in waste of resources.

**Environmental Atmosphere of Innovation-entrepreneurship**

In addition to training undergraduate abilities and qualities through teaching, creative and entrepreneurial education also needs to consider the influence of environmental atmosphere of innovation-entrepreneurship at universities. This questionnaire surveys the number of undergraduate associations for innovation-entrepreneurship and the number of undergraduates who are starting a business. In addition, the paper also investigates the policy measures and social participation of innovation-entrepreneurship through interviews with experts.

The undergraduate association is a good supplement to the innovation-entrepreneurship education. According to the survey as shown Table 3, 15% of the undergraduates think that the school does not have such organizations, which is not consistent with the facts, and 14% of the undergraduates think that the 5 and more innovative associations at the university, this situation appears only in a few schools. Thus, it is one of the ways to promote the diversification of innovation-entrepreneurship education that undergraduate innovation-entrepreneurship association should be developed. The number of undergraduates who are starting a business, "no" accounts for 36%, "one and more than" accounts for 64%. This shows that 64% of the undergraduates are able to get in touch with the people who are successful, which provides a fresh and innovative example for the undergraduates. Innovation-entrepreneurship will have a broad prospect, when the methods of education are optimized and the system and mechanism are improved.

| Proportion [%] | Option | None | Only one | Two | Three | Four | Five and more |
|---------------|--------|------|----------|-----|-------|------|---------------|
|               | The number of innovative and entrepreneurial associations of undergraduates. | 15   | 23       | 31  | 14    | 3    | 14            |
|               | The number of people who are already starting a business.                   | 36   | 18       | 22  | 11    | 3    | 10            |

According to expert interviews, it is not obvious that the universities, enterprises and social institutions in the province can promote each other to improve the level of innovation-entrepreneurship. Only LJU and LUT have built a science park to transform some scientific and technological achievements into enterprise products. In other universities, the practice of innovation-entrepreneurship mainly follows the mode of school enterprise cooperation and practice base in the period of professional education, and it is not enough to cooperate with entrepreneurs in innovation-entrepreneurship education.

**The Differences in Innovation-entrepreneurship Education among Universities**

According to the survey data, the universities are arranged in descending order according to the number of undergraduates participating in the innovative experiment and innovation-entrepreneurship competition as shown in Table 4, and in accordance with the willingness of undergraduates to innovate and start their own business from high to low as shown in Table 5. The result shows that the depth and willingness of the undergraduates of private colleges CTELUT,
LJUBC, LCLUFE and ZCNNU, and newly established colleges LCU, LUAS and LZIT, to participate in innovative and entrepreneurial activities are higher and stronger than those of the old universities LUFE, NNU, GAU, GPSLT and so on. Following are some of the reasons that caused the phenomenon to occur: Firstly, the stable state-owned enterprises, administrative and public institutions and the high pay private enterprises are more inclined to employ the graduates of the old university, but the graduates of the private and newly established colleges can only engage in low income posts. This bad situation makes them more likely to start a business as a goal for life. Secondly, the old universities are more strictly in the management of professional education, which leads to greater concerns and less spare time for the undergraduates to devote themselves to the practice of innovation-entrepreneurship. Finally, in order to improve the employment rate, the private and newly established colleges pay more attention to the innovation-entrepreneurship education, and provide more support and guidance to the innovative and entrepreneurial activities of the undergraduates. From the case of successful entrepreneurship, the graduates of old universities are more committed to innovative and entrepreneurial activities based on professional knowledge, while the ones of the private and newly established colleges more engaged in catering, wholesale and retail, service etc. Therefore, colleges and universities can carry out innovation-entrepreneurship education according to their own characteristics.

Table 4. The universities are arranged in descending order according to the number of undergraduates participating in the innovative experiment and innovation-entrepreneurship competition.

| Observation point | The order of the universities |
|-------------------|-----------------------------|
| The number of undergraduates participating in the innovative experiment and innovation-entrepreneurship competition. | CTELUT,LJUBC,LCU,LUAS, LZIT,LCLUFE |
| The number of awards in the innovation-entrepreneurship competition. | School CTELUT,LJUBC, LCLUFE, ZCNNU, LCU Provincial and above CTELUT, LUT, LCLUFE, LJUBC, GAU |

Table 5. The universities are arranged in accordance with the willingness of undergraduates to innovate and start their own business from high to low.

| Observation point | Level | The order of the universities |
|-------------------|-------|-----------------------------|
| Self evaluation of the consciousness of innovation-entrepreneurship | Strong | LCU, CTELUT, LJT, LZIT |
| The number of people with a strong willingness to start a business | More than 40% | LTUBC, CTELUT, LCU, ZCNNU |
| The number of people taking the business as the target of employment. | More than 20% | LTUBC, ZCNNU, LCU, CTELUT |
| The number of people who are already starting a business. | - | GAU, CTELUT, LTUBC, LZIT, LUAS |

Measures and Suggestions

(1) Innovation-entrepreneurship education should be extended to primary and secondary schools, gradually eliminating the confinement of conservative thinking, so that more and more people will accept it.

(2) The discipline of innovative and entrepreneurial education should be established as well as professional education. Under the guidance of this subject, the curriculum system, the management system and the teaching mode should be renewed and innovative and entrepreneurial teachers should be trained.

(3) The practice of innovation-entrepreneurship should be diversified. In addition to the traditional social practice, innovation-entrepreneurship forum, enterprise management practice and other means, innovation-entrepreneurship laboratory is necessary to be established [10]. Integrating college undergraduate innovation-entrepreneurship training programs, innovative experimental projects and innovation-entrepreneurship competitions with practical teaching is conducive to enhancing the level of practice teaching and optimizing the allocation of resources [11]. The culture of creation should be introduced into the campus to create a good cultural atmosphere of innovation-entrepreneurship
The way to explore innovative entrepreneurship using the Internet should be encouraged and supported [14].

(4) If the government, schools and social institutions have a reasonable division of labor and cooperation with each other, the innovation-entrepreneurship education will achieve better results. The government completes the top level design and formulates the policy and policy, the school assumes the main responsibility of the education for innovation-entrepreneurship, specially, non-governmental organizations including the business community, the financial sector and the foundation, should be deeply involved in the innovation-entrepreneurship education.

(5) Colleges and universities should explore the development path of innovation-entrepreneurship education according to their own characteristics, for example, the private and newly established colleges should guide undergraduates to engage in services, Internet plus, diet, retail and other general business practice, but the business based on the innovation of professional technology should be guided in the old college.

Acknowledgement

This research was financially supported by Gansu Province, 2016, the connotation development of higher education – innovation-entrepreneurship education and teaching reform research project "reform and practice of teaching methods based on the status quo of innovation-entrepreneurship education in Gansu provincial universities", the school level teaching reform project of LanZhou JiaoTong University (JGY201731 and Document [2017] No. 15).

References

[1] Liu Wei, Deng Zhichao, The survey and policy recommendations of innovation-entrepreneurship education in Chinese Universities -- Based on the sampling analysis of 8 universities. Educational Science. 30.6 (2014) 79-84.

[2] Zhao Jinhua, Entrepreneurship education in Chinese polytechnic colleges and universities based on scientific and technological innovation. Diss. Nanjing Normal University, 2014.

[3] Information on http://old.moe.gov.cn//publicfiles/business/htmlfiles/moe/moe_1623/201001/ xxgk_79761.html

[4] Liu Guiqin, Deepen the innovation-entrepreneurship education reform in Colleges and universities to further improve the quality of talent training, China's Higher Education. 21 (2016): 5-7.

[5] Huang Zhaoxin, Qu Xiaoyuan, Shi Yongchuan, et al. A new model of entrepreneurship education based on post entrepreneurship—Taking Wenzhou University as an example, Higher Education Research. 8 (2014): 87-91.

[6] Zheng Shuzhen, Dai Ying and Wang Hua. College undergraduates venture Survey innovation analysis and countermeasure research—Taking Xiamen city as a case. The investigation and analysis of college undergraduates innovation-entrepreneurship education. 7.3 (2016): 53-55.

[7] Wang Hongmei. Innovation-entrepreneurship education based on the investigation of the entrepreneurial intention of Hebei college undergraduates. Journal of Shanxi University of Finance and Economics. S2 (2015):102-103.

[8] Hao Jie, Wu Aihua, Hou Yongfeng, The construction and Enlightenment of the innovation-entrepreneurship education system in the United States. Higher Engineering Education Research. 2 (2016): 7-12.

[9] Information on http://www.gansu.gov.cn/art/2015/11/16/art_4827_255435.html
[10] Lin Wei, To explore the path of construction of innovation-entrepreneurship in laboratory, Experimental Technology and Management. 34.2 (2017): 238-241.

[11] Zou Yanfang, Zhang Lixin, Gao Ming, et al. College Undergraduate innovation-entrepreneurship training program and the cooperative relationship between experimental teaching. Experimental Technology and Management. 33.9 (2016): 172-174.

[12] Guo Lianjin, Wang Guosheng and Wan Fengsong, Building a new ecology of innovation-entrepreneurship with the education of creation. Experimental Technology and Management. 33.5 (2016): 170-173.

[13] Lin Xiaojun, Liu Jun, Zhang Hongyan, et al, Based on extracurricular teachers and undergraduate studios to cultivate college undergraduate innovative and entrepreneurial ability, Experimental Technology and Management. 32. 4 (2015): 26-28.

[14] Li Huaxin, Li Jinling, Li Wangxiu, To explore the path of entrepreneurship education in Internet plus time, Experimental Technology and Management. 33.8 (2016): 24-27.