

Research on Innovation Ecosystem in Colleges and Universities- Focus on Chongqing University of Arts and Sciences

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ABSTRACT. *The south part of San Francisco Bay Area in the north of California was an orchard a century ago. However, since the headquarters of Intel, Apple Inc., Google, Facebook, Yahoo and other high-tech companies settled here, the Santa Clara Valley has gathered numerous high-tech businesses based on Stanford University, and formed the now Silicon Valley. It plays a key role in transformation of technological achievements into real projects through the innovation and entrepreneurship ecosystem around the university integrating talents, services, funds, industries and other elements. This paper focuses on the university-based innovations and entrepreneurships to create an innovation ecosystem featuring all factors combined with multiple chains and provide provide an important example for universities to perform their functions in scientific research and social services.*

KEYWORDS: *University, Innovation ecosystem, Four chains coupling, System*

1. Introduction

In his speech at the Summer Davos held in September 2014, Premier Li Keqiang proposed to set off a new wave of ‘popular entrepreneurship’ and ‘grassroots entrepreneurship’ on this land of 9.6 million square kilometers, and a new trend of ‘mass innovation’ and ‘everyone participating in innovation’.” Since then, China has seen a wave of innovation and entrepreneurship. Colleges and universities play a key role in talent cultivation, having four most important functions, including talent cultivation, scientific research, cultural inheritance and social services; they are able to transform technological achievements into local entrepreneurship projects and are also an important embodiment of social services. In 1971, a large number of high-quality technological achievements made by Stanford University laid a solid foundation for innovation and entrepreneurship projects around the university, thus giving birth to the world-famous high-tech zone - Silicon Valley. In the 1980s, Peking University and Tsinghua University made great contributions to the birth of Zhongguancun Science Park (ZSP), which is also known as China’s Silicon Valley.

To create an innovation system featuring the four chains of Policy, Platform, Service and Innovation has become a new exploration on transformation of technological achievements made by Chinese universities and creation of innovation ecosystem in universities.

2. Integration of Element Resources to Create Incubation Platform for Innovation and Entrepreneurship

2.1 To Create Business Incubator Based on the Pioneer Park for College Students

From 2009 - 2015, Chongqing University of Arts and Sciences constructed a 3,000m² micro enterprise incubation park and established the Entrepreneurship Guidance Center for College Students to guide students to participate in the competition and provide employment incubation service. The incubator was awarded the title of “The First-batch Entrepreneurship Demonstration Base for College Students”, Municipal Entrepreneurship Demonstration Base and other honors by the Education Department and the Department of Industry and Commerce of Chongqing; Chongqing Yijia Energy-saving Lamp Co., Ltd., a micro-enterprise, was selected as one of “TOP 10 Micro Enterprises in Chongqing”; this university was awarded “National University Model in Graduate Employment” due to entrepreneurship-driven high employment rate of its graduates.

2.2 To Create New Incubation Research and Technology Realization Institute with the Incubator as the Carrier and the Research Institute as the Research Momentum

Focus is put on both students’ entrepreneurship and teachers’ innovation and the incubator for college students is used as a carrier; relevant teacher teams carry out new product research and development using the research platform, and then transform the results into entrepreneurial projects, leading to good effects, including the facts that: the university won the first place in the bio-pharmaceutical section of the National Innovation and Entrepreneurship Competition and the first place in the First National Intelligent Manufacturing Innovation and Entrepreneurship Competition and was awarded the tile of “National University Model in Innovation and Entrepreneurship”.

2.3 To Establish the Practice System of Innovation Incubation Around Colleges and Universities

First, use the incubator as a carrier to integrate various high-tech zones to build a pre-incubation base.

Second, relying on the research institute, provide opportunities for teachers to join research teams and form entrepreneurship teams of college students so as to promote students' innovation.

Third, use the physical school as a base to create a working mode for the School of Innovation and Entrepreneurship cooperating with secondary colleges in talent cultivation so as to guide and drive students to start their own business. The School of Innovation and Entrepreneurship draws on the practices of Finnish Entrepreneurship Academy and LBD (learning by doing or learning by developing) based and Zhongguancun's LBCC based entrepreneurial talent cultivation modes to provide systematic entrepreneurship training and encourage students to participate in various competitions and become members of the incubator; a number of students' entrepreneurship projects were derived from technological innovations of teachers from secondary schools as well as horizontal researches and laboratory achievements.

Fourth, with the support of youth associations, cooperate to build a "Youth Entrepreneurship Space", give play to these associations and transform their achievements from practice activities into entrepreneurial projects, explore new ways to provide thoughtful support for innovative and entrepreneurial youths, and create a platform and battlefield for independent innovation and entrepreneurship of college students. Different innovation and entrepreneurship competition were organized for students from different associations, who were highly engaged with active response, and many investors on the spot of the finals had intention to sign some of these projects.

Fifth, set up regional innovation and entrepreneurship alliances to attract more universities, enterprises, industrial parks, and investments and financing to form a cooperative and shared entrepreneurial ecosystem from universities to the society. The goal is to enable the following seven respects: First, teachers and students work together to start a business as partners so as to solve such problems as difficult facing rapidly developing SMEs in recruiting desired talents or failure to retain talents upon investment in training. At the same time, lower the threshold for entrepreneurship to let more people get practical training; second, provide investment and financing for entrepreneurial projects; third, provide exhibition services for projects, talents and achievements; fourth, build project libraries, talent pools, and expert database and enable sharing of information related to policies, activities and education; fifth, provide guidance in the entrepreneurial process, such as excellent practices and expert suggestions; sixth, provide real and true entrepreneurship oriented training; seventh, organize training and investigation activities for university teachers in these alliances and coordinate and share social resources.

Sixth, create an innovation ecosystem surrounding colleges and universities and focus on the existing positioning and goals to build an innovation ecosystem in Chongqing University of Arts and Sciences and promote the combination of capital chain, innovation chain and industrial chain so as to provide value chain and service platform support for innovation and entrepreneurship. Additionally, great efforts

have been made to create the graded carrier of innovation and entrepreneurship featuring “One Core Zone, One Street and One Corridor” within 10 minutes to provide total-element, specialized, convenient, open and low-cost services for innovation and entrepreneurship, give full play to the leading role of universities’ knowledge and talents in innovation and entrepreneurship, cultivate innovative enterprises, implement innovation-driven development strategy in Yongchuan, focus on how to get rid of the dependence featured by the traditional path to economic growth, and provide a model for transformation of development mode and improvement of economic development quality.

3. Exploration of New Mode for Innovation and Entrepreneurship

In general, we believe that the type of entrepreneurship among college students can be explained using a pyramid as follows: research based, learning based and enterprise based, accounting for 10%, 20% and 70% or so respectively. Research based entrepreneurship is related to research and development and usually comes into being by tracking teachers’ research; learning based entrepreneurship focuses on special training and practices and usually occurs in entrepreneurship schools collaborative with entrepreneurial pioneers; enterprise based entrepreneurship relies on the leading role of social enterprises, which bring real projects, modes and guidance to universities to seek for entrepreneurial partners and allow students to start with probation, training, practice and internship for the purpose of starting their own business and finally change the partnership mode into independent entrepreneurship.

The reason for this idea is that we have reflected on some common problems in the current work of innovation and entrepreneurship in Chinese universities. In our view, there are the following problems in college innovation and entrepreneurship: high threshold for entrepreneurship but no sufficient preparation and resources so that a large number of students are afraid to participate, resulting in a low total number of students participating in entrepreneurial practices; very low success rate of college students’ entrepreneurial projects so that many voices discourage colleges students to start a business and even give an absolute deny to doing so; poor overall quality of their entrepreneurial projects, most of which are simple social services lack of intellectual and innovative elements. In this regard, research, enterprise and learning based modes are respective solutions to the three problems mentioned above.

4. Focus on “Four Chains Coupling” Innovation and Entrepreneurship Ecosystem

4.1 To Establish an Innovation Ecosystem Featuring “Four Chains Coupling”

Promote the coupling of policy chain (sunshine), platform chain (soil), innovation chain (air) and service chain (moisture) to provide value chain and

service platform support for innovation and entrepreneurship, and create the graded carrier of innovation and entrepreneurship featuring “One Core Zone, One Street and One Corridor” within 10 minutes to provide total-element, specialized, convenient, open and low-cost services for innovation and entrepreneurship, give full play to the leading role of universities’ knowledge and talents in innovation and entrepreneurship, cultivate innovative enterprises, implement innovation-driven development strategy in Yongchuan, focus on how to get rid of the dependence featured by the traditional path to economic growth, and provide a model for transformation of development mode and improvement of economic development quality.

4.2 To Form an Innovation Aggregate Featuring “Six Elements and Six Collaborations”

Adhere to high-starting-point planning, high-standard construction, marketization, specialization, standardization, and institutionalization, and integrate the ecosystem construction into the overall development strategy of universities in innovation and entrepreneurship. Make great efforts in hardware upgrading and software branding to attract alumni return to the school for entrepreneurship with emotions, encourage teachers to enter the incubator for entrepreneurship, support students with good ideas to participate in entrepreneurship, set up an integrated system of innovation and entrepreneurship based offices, communities, life, activities, services and brands, and create an collaborative system integrating all key factors.

4.3 To Vigorously Implement the “Entrepreneurship Partnership” Program for College Students

“Entrepreneurship + Employment”: enterprises provide basic conditions, funds, training, technology, resources and other support for student partners, who will receive market test and enterprises’ assessment according to relevant requirements, and those who pass such test and assessment are qualified to be project leaders or team members while those who fail will be ruled out; “Entrepreneurship + Internship”: under the guidance of social projects, part of senior students complete their internship tasks in the form of entrepreneurship with the assistance of the school in recruiting team members, and the enterprises recruit employees on a selective basis and provide internship opportunities for selected students, and finally some students will become entrepreneurial partners of the enterprises upon two-way choice; “Entrepreneurship + Practical Training”: the enterprises implant real projects and market resources into the school, and the school entrusts relevant departments to select qualified students and form student teams, and these students will have an opportunity to turn their assignments or works into products and commodities based on relevant requirements so as to realize entrepreneurship without going out from the school; “Entrepreneurship + Probation”: to attract more students pay attention to and participate in entrepreneurial activities, the school will introduce real corporate

projects to encourage freshmen and sophomores to join project teams and pay a visit to relevant enterprises to experience corporate cultures in person during winter or summer holidays or festivals.

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