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Research on the Cultivation of Postgraduates' Creative Ability of Scientific Community Based on Knowledge Management

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Abstract
The innovation ability of graduate students to concern about the quality of postgraduates in education and their follow-up development, Construction the scientific community as the cultivation of postgraduates' creative ability for a platform is very important. The article discussed the connotation of the scientific community, according to the theory of knowledge management put forward the construction model of scientific community, and on the basis constructing the scientific community operation strategy of interdisciplinary organization as a platform, the academic exchange as a platform and constructing the network as a platform.

Key words: Graduate students; Innovation ability; Scientific community

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INTRODUCTION
Innovation is the soul of a nation's progress, is an inexhaustible motive force for the country's prosperity." Comrade Jiang Zemin is summed up the scientific conclusion about the development of the world history experiences and lessons. National progress and prosperity of the country relies on education especially high level personnel training of the graduate education. While in current main emphasis on postgraduate education is the cultivation of innovation ability. The State cultivate the innovation ability of graduate students by a series of measures, one of these measures is to establish and perfect the scientific community.

1. KNOWLEDGE INNOVATION IS THE CORE OF KNOWLEDGE MANAGEMENT
To learn knowledge management, the concept of knowledge must be made a definition. In the annual report of "knowledge-based economy," OECD argues "knowledge is the results that human understanding of the world," divided into four species, know—what, know—why, know—how, know—who. That is the fact of knowledge (know—what), and the principle of knowledge (know—why), skills knowledge and know a source of knowledge (know—who).

The first two categories of knowledge were named as explicit knowledge by the OECD report; the latter two categories of knowledge were reduced as implicit knowledge. Knowledge is defined as justified true beliefs and bodily acquired skills (Nonaka, 1990; Nonaka & Takeuchi, 1995).

In 1986, Wiig said the concept of knowledge management (KM) in a meeting which United Nations International Labour Organization organized in Switzerland earliest. Study on KM was rising speedily. Many organizations have begun to introduce the concept of KM to organizations for knowledge management and made a very good progress. Although researchers definite KM from different angles, but do not have a clear concept of agreement on the definition so far.

Knowledge innovation is the concept that the rise of knowledge management research and its content is evolving. The study on knowledge innovation in China, "behavior" has become the mainstream of knowledge

innovation research. These researchers believe that innovation is a way to assess, change, and improve individual skills and behavior. Knowledge is equivalent to the process for them; it is a wide range of complex, dynamic arrangements to change the skills continually. They believe that "knowledge innovation is the process which access to new science and technical and scientific knowledge through scientific research" (Lu, 1998).

"Knowledge innovation is the process of acquiring and creating new knowledge to the economic and social interests, the entire process of the production, dissemination and application of knowledge." (He, 1999) "Tacit knowledge and explicit knowledge perspective, Enterprise Knowledge Innovation is the process which tacit knowledge, explicit knowledge, combinations of them can be transformed into explicit knowledge that the dominant knowledge-sharing of organizations." (Jin, 1998) Research on knowledge management, knowledge innovation is the most important research. One of the most influential theories of organizational knowledge creation is that developed by Nonaka and Takeushi (1995). In their analysis, an organization creates new knowledge through the conversion and interaction between its tacit and explicit knowledge. The SECI process is a famous Knowledge conversion mode, including four modes of knowledge conversion, They are: (a) socialisation (from tacit knowledge to tacit knowledge); (b) externalisation (from tacit knowledge to explicit knowledge); (c) combination (from explicit knowledge to explicit knowledge); and (d) internalisation (from explicit knowledge to tacit knowledge) (Nonaka, Toyama, & Konno, 2000, pp.5-54).

In the SECI process (Ibid.), socialisation is the process of converting new tacit knowledge through shared experiences. Since tacit knowledge is difficult to formalise and often time- and space-specific, tacit knowledge can be acquired only through shared experience. Externalisation is the process of articulating tacit knowledge into explicit knowledge. When tacit knowledge is made explicit, knowledge is crystallised, thus allowing it to be shared by others, and it becomes the basis of new knowledge. Combination is the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge. Explicit knowledge is collected from inside or outside the organisation and then combined, edited or processed to form new knowledge. Internalisation is the process of embodying explicit knowledge into tacit knowledge. Through internalisation, explicit knowledge created is shared throughout an organisation and converted into tacit knowledge by individuals.

2. THE CONNOTATION OF THE SCIENTIFIC COMMUNITY

Modern science originating the west is meaning to discover, to accumulate and to apply the recognized general truth or theorem and has been systematized and stereotyped knowledge. The concept of the scientific community was first put forward the earliest by a British scholar Polany in 1942 in the "Scientific Autonomy", after developed by the famous philosopher of science Kuhn and famous sociologist of Science in Price and Merton, had become basic concept in scientific sociology (Merton, 2003). The scientific community is specific and abstract concepts, the main manifestations in specific aspects are in order to pursue the truth, to explore the mystery, the scientific research workers from countries in the world use certain scientific standards and methods and set up academic conferences, panel discussions, forums, communities, institutions and a variety of formal organization and informal organization through mutual communication, reasonable competition and cooperation. The concrete manifestations in abstract aspects are academic norms and systems that are all members of the academic community should follow and emotional sustenance which is a sense of belonging, a common goal and the similar value orientation and concept and so on.

The Western medieval universities provides the practical basis for the scientific community, the university is research center of students and teachers, although suffering the church 's strict control, they launched intense discussion and exchange with the church unceasingly which had played a positive role in promoting the European culture and society development. Therefore, Universities are the European academic center, and the cradle of the scientists, has become the modern significance of the scientific community (Shi, 1999). The scientific community had promoted scientific development through scientific research, but also cultivated a group of scientists. As in the University of Cambridge to study and the work of Newton, later became the Royal Society member, a wide range of academic exchanges and cooperation made him become a world-renowned scientist. Outstanding representative of Gottingen school Born presided over the "material structural seminar" has attracted to Heisenberg, Oppenheimer, Compton, Jordan, Hund and a number of other people, which had made a decisive contribution to the development of quantum mechanics (Wang & Gui, 2000). Through carding history, the author thinks that the scientific community is that having the same or similar value orientation, inner feelings and similar professional skill and interest groups (mainly referring to learners and, which instructors including teachers, experts, scholars and others) are based on the certain organization, exchange and learn commonly, share and compete mutually to complete a certain task and promote tissue and themselves professional development. This paper mainly relates to the scientific community construction that oriented to cultivate postgraduates' creative ability. Through informal organizations complementing formal organizations each

other, perfecting "double tutor system" and strengthening the scientific research innovation teams and practice innovation teams communication and cooperation establish the platform for the postgraduate innovation ability.

3. THE CONSTRUCTION STRATEGY OF SCIENTIFIC COMMUNITY

3.1 The Scientific Community Model

Knowledge management is the inevitable product which the mankind enters the era of knowledge economy. Researchers on knowledge management have formed a hundred flowers blossom. The paper borrowing Yogesh's views think that knowledge management caters to the enterprise facing more and more discontinuous changes in the environment, aiming at the organization adaptation, survival and competition ability and other important aspects. It essentially consists in organization development process, and to seek for an organic combination of data and information processing ability to which information technology will be provided and the creative ability of human (Malhotra, 2001). Knowledge management theory is applied to the high-tech fields to obtain a strong innovation ability and competitive advantages, but compared to other industry popularization and application of knowledge management in the field of education was relatively starting late, In the year of 2000 international organization for economic cooperation and development (OECD) published "knowledge management in the learning society" which pointed out clearly, in the public sectors, including the departments of education, knowledge dissemination and application were in the low level (Yi et al., 2006, p.20). the important duties of education is to teach the students to search for "knowledge map", of which important property is merely to point out the location or source of knowledge, does not contain the content of the knowledge, the connection information includes the personnel, procedures, contents and the relationship between them. In a word, the main functions of knowledge map are that when we need some professional knowledge, we can find a specific knowledge of knowledge map guiding (Yi et al., 2006, p.24). Knowledge map depends on the effective organization, to the school education, the establishment of learning organization is very particularly important. Postgraduates search for knowledge map under the guidance of tutors, the process of searching is favorable to the development of innovative ability. In order to guide the innovation ability of graduate students in scientific and rational form, constructing a special kind of learning organization— the scientific community becomes the inevitable and realistic need for education.

This paper argues that the creating the learning platform of graduate students' innovative abilities should be rely on formal organization of graduate students studying daily and informal organization of amateur life, ensure dual tutorial system by the first tutor leading scientific research innovation teams and the second tutors leading practice innovation teams, Students from the kindergarten level are expected to develop awareness that science is a human endeavor conducted by teams of scientists and engineers (Sharkawy, 2009), which jointly contribute to the formation of scientific community and construct basic frame of scientific community (Figure 1).

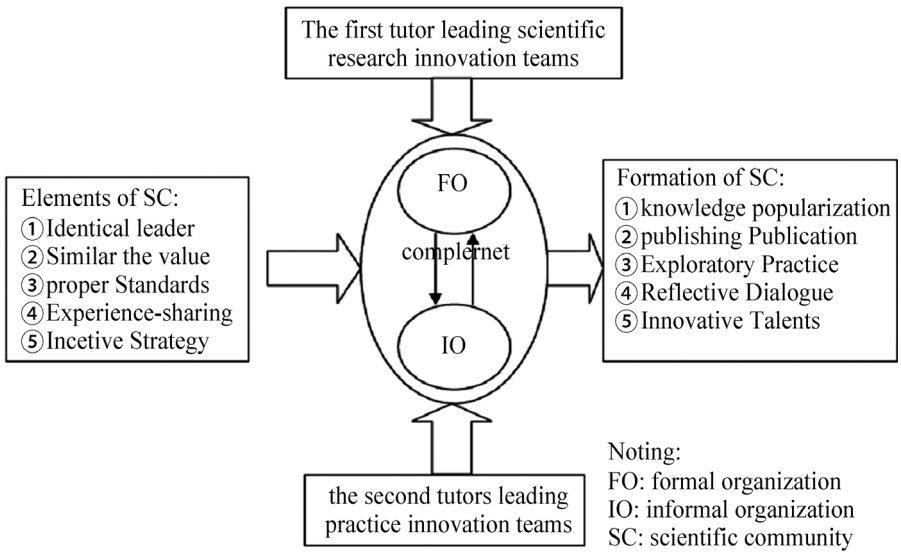

Figure 1
The Model of Scientific Community

3.2 Constructing Operation Strategy of the Scientific Community

3.2.1 Constructing Interdisciplinary Organization as a Platform for the Scientific Community

The information times which the innovation of science and technology is speeding up urged the scientific research to break barriers and boundaries between disciplines and rigorous, to strengthen interdisciplinary integration gradually, appear a lot of cross disciplines. On the basis of this interdisciplinary organization will emerge as the times require. A scientific community is generally characterized by different research topics and contributions that come from a variety of disciplines and backgrounds. In this context, it might be useful to have an idea of the importance of the different research topics and researchers who work on them within a scientific community (Volpentesta & Felicetti, 2010). In this paper, the interdisciplinary organization mainly located in the Universities, because the universities undertake the duty of cultivating talents especially innovative talents; have the congenital advantage in promoting the integration of disciplines, professional setting optimization.

First of all, different professional background of the experts, teachers and students (mainly refers to graduates) together in the university constitutes the interdisciplinary organization, which involved staff are also constantly changes according to task complexity. The staff is coming different professional backgrounds join the organization to solve various complicated integration issues. In the mid-1940s of Venezuela, small groups with teachers of a more intellectually serious outlook began to take up appointments in certain university faculties and schools, where they tried to create opportunities for the teaching and investigation of scientific and technological subjects (Vessuri, 1984). According to the nature and the size of the task of the interdisciplinary study determine interdisciplinary organization is open, participating personnel covering width, personnel demand quantity, which is not immutable and frozen, closed rigid organization, is a dynamic and flexible organization (Long & Wang, 2010).

Secondly, the orderly operation of the interdisciplinary organization needs to be obtained from the supports of government and university. About government except for transferring certain development funds for the interdisciplinary organization, corresponding supported policies are beneficial to benign development of the interdisciplinary organization, such as the "985 Project"of colleges and universities in our country emphasizes increasing disciplinary structure adjustment, promotes interdisciplinary research, builds advantage discipline innovation platform. Universities should create a loose atmosphere of study for interdisciplinary organization, and so as to avoid interfere from outside to personnel of the organization. Universities make positive measures in cultivating innovative talents combined with the government's policies. Such as according to postgraduates innovative projects, Universities unveil the corresponding incentive policies; the appearance of University union and so on.

Finally, the interdisciplinary organization as an organizational form of university, training talents is constant function. Interdisciplinary research in university is innovation which is scientific development to a certain extent to seek a breakthrough in the mode of knowledge production; is to meet the market economy on talent demand for the diversification of knowledge transfer mode; is to solve complex social problems in mode. To realize the innovations needs more interdisciplinary talents. Chinese Academy of engineering Xie Heping pointed out: "The interdisciplinary fusion is development of advantageous subjects, growth point of emerging discipline, breakthrough in a major innovation and commanding point of talent cultivation" (Wen, 2011). It is thus evident that the innovative talents' cultivation is intrinsic requirement and development power of the interdisciplinary organization, and is characteristics of the organization itself (Figure 2).

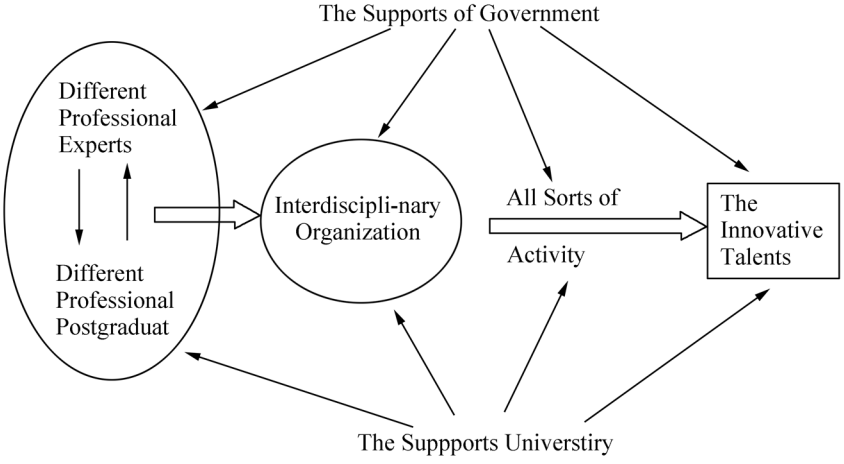

Figure 2
Interdisciplinary Organization for the Scientific Community

3.2.2 Constructing the Academic Exchange as a Platform for the Scientific Community

Academic exchange is that postgraduates participate in a series of activities (mainly academic lectures, conferences, forums, panel discussions, Academic Salon, international and other forms of cooperation) which benefit for their innovative ability besides the formal curriculums. The universities regularly invite domestic and foreign well-known experts and scholars, managers, entrepreneurs and others to launch lectures in which they can teach their academic achievements, exchange their learning experiences and successful experience to enable students ideological motivation; Instructors encourage graduate students participate in the domestic and international academic conference to broaden their academic horizons; Each university has hold a diverse academic forums, and targeting specific groups in forums such as the Doctoral Forum, doctoral student forum was promoted cross-discipline on certain level, and also was advantageous to the graduate students' innovative consciousness and innovation ability development; panel discussion and Academic Salon in postgraduates' study play a very important role which can arouse postgraduates creative thinking with instructors, experts and senior graduate students by mutual communication and thinking of the collision in a relatively relaxed atmosphere; along with accelerating internationalization, international exchange and cooperation in education play an increasingly prominent role. There are the main forms which include exchanging students, to visit schools, joint training students and inviting foreign experts lecture courses. The scientific community has a loose nature but has a powerful influence by a wide range of academic exchanges, which contributes to formation a good mutual learning, cooperative, competitive academic atmosphere, improving postgraduates academic foundation, expanding their research interests and forming a new academic thought and achievement.

3.2.3 Constructing the Network as a Platform for of Scientific Community

The advent of the information age shrunk the world ranges, network make the "global village" become synonymous of the world, which provides convenient channels to world experts, scholars and graduate students. There are many mainly forms of network as a platform for the scientific community: (a) Website construction. The website is an open platform for the sharing resources, by which people can update, release the relevant topic, organize various kinds of research activities, conduct various forms discussed, at the same time upload rich learning resources. The university campus website construction is the best illustration. (b) Digital publishing platform. Springer electronic journals database, EBSCO database (in English), various types of Digital Library in China and other countries, among which CNKI is the representative academic exchange platform and is the world's leading digital publishing platform and the world's largest Chinese periodical full-text database, having the mass of the academic information (Liu, 2006), strong information analysis function is convenient reference for learning and research. (c) Chat platform, such as BBS, MSN, QQ, E-mail, Blog and so on. By chat mode to strengthen the interactive discussion, solve problems and confusions in daily life and learning and promote the idea. The forms make different areas, national, ethnic and racial staff link up mainly in irregular and constitute a strong lineup of scientific study.

In summary, innovative ability training of postgraduates especially doctoral students in our country related to quality of higher education and the future of scientific undertakings. Scientific community relying on the platform construction, ensuring with a series of academic activities, aiming to develop the ability will be beneficial to graduate students' innovative consciousness and innovative ability development, to the formation of scientific, orderly, benign scientific research atmosphere and to the organization's own stable, sustainable development. The scientific community based on the cultivation of postgraduates' creative ability would conform to trends of science and technology development and the requirements of talents training, which will promote the development of graduate education in our country.

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