Analysis of the Development Status of Standardization Education in China

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Abstract: Carrying out standardization education is an inevitable choice to meet the needs of economic and social development and improve the level of developing standardization talents. This paper analyzes the development status of standardization education from the perspectives of the construction of standardization science discipline and standardization talents training system as well as international cooperation for standardization education, and finally reaches the corresponding conclusion.

Keywords: standardization education; talents training; standardization science; international cooperation

In the context of the global economic integration, the role of standardization becomes significant in the promotion of trade, exchange, and technological progress. However, there is a problem worldwide that the quality and quantity of standardization talents fails to keep up with the actual needs. This issue drew the attention of standardization research and educational institutions and industry in China. Therefore, relevant departments carry out a series of measures and methods designed to increase the quantity of standardization talents and to raise talents quality by training mode through advancing standardization science discipline construction and dynamical building standardization talents as well as strengthening international cooperation for standardization education.

1. Valuing and developing the construction of Standardization Science Discipline Gradually

Verman put forward a requirement that standardization is in need of learning professional knowledge as a discipline in 1973 (Verman, 1973). The discipline of standardization science mainly studies standards and standardization activities and conducts researches through the theories and methods of standardization as well as and the mechanism of standards. From the demand of establishing a discipline, the knowledge system of standardization science discipline should include the concepts, general knowledge, basic theory, methodology, applied technology knowledge, specialized domain knowledge and specific standard knowledge involved in standards and standardization activities (Dianyi Bai, 2010). The body of knowledge of standardization
As for the research on standardization science discipline, the Institute for Standardization Theory and Strategic Studies of the Chinese National Institute of Standardization (CNIS) carried out the “Feasibility Study on Standardization Science Discipline Construction” in 2007, defining the connotation and study contents of standard science, discussing on the basic theory and framework of the construction and development of standardization science discipline, and building the ideal model of standardization education according to the development process of knowledge system such as standardization theories and methods. China National Institute of Standardization also set up a Theory and Education Institute for the country's most outstanding professionals to commit to the compiling and planning of standardization teaching materials. As for the establishment of the standardization science discipline, China Jiliang University has launched a series of practical activities. It opened its doors in 1996 to enroll full-time undergraduates of standardization and quality management, set up Standardization College in April 2008 which became the first standardization secondary college built in university and is mainly responsible for the cultivation and training of standardization specialized talents of various levels such as undergraduates, graduate students and continuing education of serving officers, and embarks on the standardization undergraduate reporting, standardization discipline construction as well as the compilation and publication of standardization series textbooks. On this basis, China Jiliang University was formally approved by the Ministry of Education to set up “Standardization Engineering” undergraduate major in 2010 after continuous efforts. This is the first time for China to officially add “Standardization Engineering” undergraduate major to higher education undergraduate course catalogue, becoming the important achievements of standardization discipline construction standard.

Although the construction of standardization science discipline have made certain progress, and the standardization science discipline has explicit object of study, main framework with related unique theories and research methods that inspires a wide range of needs in society. However, the development of a discipline requires a certain period and the development of standardization science discipline is still at an initial stage in our country. Therefore it is in need of further research in the foundation of knowledge systems and methodologies.

II. Building the Training System of Standardization Talents from the Perspective of Lifelong
Education

The formation of talents competence is a dynamic and systematic process. Standardization talents need to have a good knowledge of diverse knowledge systems including professional and standardization knowledge extremely practical and applicable. Therefore, interdisciplinary should be an important consideration in the process of talents training and all links from basic theory, professional practice to the practice in the field should be emphasized to solve the problem of crossing the boundaries from university to industry, from major to profession in the process of competence formation. Based on this concept, drawing on the experience of the United States, South Korea and other countries, China has built the talents training systems of standardization education at the different stages of the formal education and continuing education of universities.

In china, more than 30 universities have run various types of standardization education.

There are more than seven Universities which have carried out standardization major for undergraduate students and 11 universities which have set up standardization program at the postgraduate stage in China. Meanwhile, one university has set up Dr. graduate education of standardization and 21 universities have offered standardization course which are mainly related to majors of economic management, engineering, agriculture, law and so on(Zhongmin Wang, 2010). In fact, many students of engineering majors have applied a lot of standards in the process of study and research. Currently, curriculum education is one of the main ways in formal education of universities. Curriculum education is a course of standardization direction opened in public class and elective courses, serving as knowledge supplement for management and engineering students; another important way is double degrees, it is a talent training model of double majors or degrees for those who have professional engineering background or management background. On the basis of the original major, students reach the corresponding competence requirements of theoretical knowledge and practical training of standardization major direction through certain additional credits. However, in the future development trend, the standardization major training of undergraduate will gradually become the mainstream. Colleges and universities in China have made certain achievements in promoting the standardization education and have obtained recognition by the international organization for standardization. In 2007, the “Undergraduate Project of Standardization Education in China Jiliang University” of the China Jiliang University obtained the “ISO Standardization Higher Education Award”.

The training in higher education has laid the foundation for further improving the theoretical
system of standardization discipline and cultivating basic standardization talents for related industries. The demand for talents originated from the needs of industries, so the training in continuing education stage started earlier than formal education in the aspect of standardization education in China. The departments carrying out standardization continuing education in China are mainly the Standardization Administration of the People's Republic of China (SAC) and the other standard associations which employ a more flexible way such as short-term training courses, seminars, etc. The main objects are also standardization administrative department, the standardization professional and technical committee, various research institutions, associations and corporate staff. In order to further promote the development of standardization professional education, the Shanghai Municipal Bureau of Quality and Technical Supervision and the Shanghai Personnel Bureau launched a standardization engineer professional qualification certification exam in 2005 for the talents to obtain the qualification of standardization engineers. This action has not only enhanced the power for standardization professional education from the source, but also laid a good foundation for the future standardization professional qualification system.

The full combination of formal education and vocational education, with formal education concerning knowledge-oriented learning and understanding and vocational education focusing mostly on skills-oriented learning practice and business practice, enables more education objects to equip themselves with employability in the field of standardization.

Ⅲ. Promoting and Advancing the International Cooperation of Standardization Education

Internationalization is a significant nature of standardization talents, especially the high-level standardization talents who must possess an international outlook. Since 2006 when the international organization for standardization, industry, education and research communities established the International Cooperation for Education about Standardization (ICES), as a member China has established wide-range and close exchange and cooperation with ICES and undertook a number of seminars and workshops on international cooperation for standardization education. Meanwhile, China has established long-term cooperative relations with major international standardization organizations, ISO, IEC, ITU, etc. China is also an active participant in APEC Strategic Education, Program on Standards and Conformance, Asian Link Project on Standardization Education and EU Asia-Link project on Standardization Education. Through these meetings and carrying out cooperative projects, China has further strengthened contacts and exchanges with foreign standardization educational institutions and countries and to some extent
also ensured the synchronization of teaching framework establishment, teaching materials, teaching cases selection, curriculum development and other aspects of standardization education.

In addition to establishing long-term cooperation with international standardization organizations, taking the diversity, integration and practicality of required knowledge for standardization talents into consideration and that these knowledge, competence, and literacy training need not only systematic training during higher education stage, but also more targeted intensive training and practical exercise during professional education stage, domestic standardization bodies have opened a series of international training aimed to enhance standardization talents. For example, SAC opened English training courses of the international standardization knowledge; in 2011 SAC and the International Organization for Standardization (ISO) signed the 2012-2015 Memorandum of Co-operative Training for annual selection of high-level talents in the field of standardization to participate in the ISO / SAC secretary week training course, thereby substantially enhancing competence and level of our standardization to participate in international standardization.

IV. Conclusion

In the scene of rapid development of knowledge economy and Information Technology, industry pay more attention to the strategic guidance and management function of standardization, and it also makes higher requirements on the professional level and comprehensive competence of talents, which drives us to further expand the breadth and depth of standardization education. The urgency of standardization education has got more and more stress, but nurturing the social consciousness of standardization and cultivating top-notch standardization talents still need further attention and strengthening. For example, those questions that need to be constantly reinforced in the future standardization education are: from the perspective of lifelong education, how to learn from South Korea and other countries and regions to inculcate and implant the related concept of standardization in K12 basic education stage, and strengthen it in public education and universal education; from the perspective of practical education, how to integrate graduates trained in colleges and universities as soon as possible into the standardization practice of various industries to realize joint between theoretical knowledge and practical experience; from the perspective of training top-notch talents, how to cultivate high-end standardization talents who are equipped with solid theoretical foundation and rich practical experience and not only proficient in foreign languages but also familiar with the international standardization work rule of the market rules.
Reference

