Comparative Analysis of the Selections and Frameworks of Key Competencies in China, Singapore, Korea and Japan

Yiwen Xie[(✉)]

School of Foreign Studies, Henan Polytechnic University, Jiaozuo, China
xyw18339111236@163.com

Abstract. Intense global competition has shifted the focus of education reform to how to cultivate globally competitive talent, thus making key competencies research emerge and flourish world-wide. This article takes China, Singapore, Korea and Japan as examples and studies their key competencies selections and frameworks. Through generalization and comparison, their similarities and differences are systematically analyzed. Based on the reality of China, four suggestions for China's subsequent key competencies research are put forward in the end.

Keywords: Key Competencies · Key Competencies Framework · 21st Century Skills · International Comparison

1 Introduction

Since the 21st century, the innovation-driven knowledge economy has gradually replaced the industrial economy. "As computer and communication technologies improve in quality and decline in price, these routine tasks are increasingly codified in computer software and performed by machines. Non-routine tasks require problem-solving, intuition, persuasion, and creativity" [1]. The examination-centered "ivory tower" training model in higher education institutions has produced a large number of research-oriented talents who severely lack social practice skills and are unable to adapt to practical work [2]. Deng Li and Peng Zhengmei (2019) point out that since the 21st century, to cope with global economic competition, technological changes and future challenges, the 21st century skills movement beyond knowledge has emerged in the field of basic education worldwide [3]. Liu Jian et al. (2016) argue that although the term "key competencies" has been expressed differently in various contexts, for example, as "21st Century Skills" in the United States and "General Capabilities" in Australia, they all concern about what kind of citizenship should be developed [4].

The international comparative research achievements on key competencies are abundant, but the shortcomings cannot be ignored: not enough attention is paid to the key competencies framework, which is an important research outcome of key competencies and less article focus on China and the countries in Asia. Therefore, this paper selects the four Asian countries with similar geographical, cultural backgrounds and compares their key competencies selections and frameworks to find more relevant and meaningful insights for China's subsequent key competencies research.

2   Key Competencies Framework in China, Singapore, Korea and Japan

The key competencies framework is the most intuitive representation of the dimensions and specific indicators of key competencies. In this part, key competencies frameworks of China, Singapore, Korea and Japan are introduced.

2.1   Key Competencies Framework of China

In 2016, China released the research achievement of "Developing Key Competencies of Chinese Students", announcing that key competencies framework in China is centered on cultivating a "well-rounded people". Cultural foundation, autonomous development and social participation are the three main aspects. Cultural foundation contains humanistic connotations which includes humanistic accumulation, humanistic sentiment and aesthetic interest and scientific spirit which includes rational thinking, critical questioning and courageous inquiry. Autonomous development contains healthy living which includes self-management, healthy personality and cherishing life and learning to learn which includes information awareness, frequent introspection and being willing to learn. Social participation contains shouldering responsibility which includes international understanding, national identity and social responsibility and innovative practice which includes technology application, problem solving and labor awareness.

2.2   21st Century Key Competencies Framework of Singapore

In 2010, the Singapore Ministry of Education introduced the 21st Century key competencies Framework. The framework includes three levels: the first level is "Core Values" and is the core part of the framework; the second level represent social and emotional competencies including self-management, self-awareness, responsible decision-making, relationship management and social awareness; the third level is 21st century competencies which contains critical and inventive thinking, civic literacy, global awareness, cross-cultural skills, communication, collaboration and information skills. Those all belong to the specific skills needed in 21st century.

2.3   Key Competencies Framework of Korea

In 2015, the Korean Ministry of Education introduced six key competencies for the first time that students should possess in the new round of basic education curriculum reform: Knowledge and information processing competence; creative thinking competence; aesthetic perceptual competence; Self-management competence; communicating competence and community competence [5]. The fundamental goal is to cultivate autonomous human beings based on the cultivation of creative human beings with basic abilities, educated human beings with diverse understanding, and symbiotic human beings who communicate with the world.

2.4 21st Century-Type Competencies in Japan

In 2016, the National Institute for Educational Policy Research (NIPR) released the final framework of Japan's "21st century-type competencies", which consists of three levels: basic competencies to use tools which includes language-use skill, cyber-use skill and information-use skill; thinking competence to recognize and think about problems in depth which problem discovery and solution, logical, critical and creative thinking, competence, meta-cognition and adaptive learning competence; and practical competence to solve practical problems and deal with interpersonal relationships which includes autonomous act, interpersonal relationship formation, participation in a sustainable society building competence.

3 Comparative Analysis of Key Competencies Frameworks and Selections in the Four Countries

In this part, similarities and differences in the four countries' key competencies frameworks and selections are analyzed after the competencies selections are sorted and counted.

3.1 Classification and Frequency Counting

Many scholars have explored the method of comparing and analyzing the key competencies frameworks and selections of different countries and international organizations. After sorting the competencies selections global in 29 major countries (regions) and international organizations, Shi Man et al. (2016) extracted 18 core competences [6]. This article will use 18 core competences indicators extracted by Shi Man et al. as the tool to analyze key competencies frameworks and selections of the four countries (Table 1).

3.2 Analysis of Similarities and Differences

Many similarities and differences in the four countries' frameworks and element selections are revealed. Overall, the four countries have similar focus areas and different framework structures and cultivation emphases.

3.2.1 Similar Focus Areas

On the whole, those frameworks all cover wide ranges and various aspects. First, all four countries occupy half or more of the competences, with China and Singapore being particularly prominent, covering 15 and 12 items respectively. In addition, the four countries show great interest in developing competences in basic areas, higher-order cognition, and personal growth dimensions, but the focus on emerging areas is still far below the world level. Specifically, language competence, mathematical competence, information competence, critical thinking competence, creativity and problem-solving competence, self-awareness and self-management, and communication and cooperation skills are the core competence that all four countries value; while environmental competence, financial competence, and leadership have yet to receive extensive attention from these four countries.

Table 1. Comparison of the Key Competencies Indicators of China, Singapore, Korea and Japan

Dimension	Indicator	China	Singapore	Korea	Japan
Basic Areas	Language Competence	✓	✓	✓	✓
	Mathematical Competence	✓	✓	✓	✓
	Technology Competence	✓	✓	✓	✓
	Human and Social Competence	✓		✓	✓
	Artistic Competence	✓			
	Exercise and Health Competence	✓			
Emerging Fields	Information Competence	✓	✓	✓	✓
	Environmental Competence				
	Financial Competence				
Higher Level Awareness	Critical Thinking Competence	✓	✓	✓	✓
	Creativity and problem-solving Competence	✓	✓	✓	✓
	Learning to Learn and Lifelong Learning	✓	✓		
Personal Growth	Self-awareness and self-management	✓	✓	✓	✓
	Life Planning and Happiness	✓	✓		
Social Development	Communication and Cooperation	✓	✓	✓	✓
	Leadership				
	Intercultural and International Understanding	✓	✓		
	Civic Responsibility and Social Participation	✓	✓	✓	

3.2.2 Different Framework Structures

A comparison of the framework structures of the four countries reveals that their framework structures are different. China, Singapore, and Japan have a core diffusion framework structure, while Korea has a juxtaposed interactive framework structure. The framework of China focuses on the development of a well-rounded human being, including cultural foundation, social participation, and autonomous development; the Singaporean framework focuses on the development of core values, followed by the development of social and emotional intelligence and 21st century competence; and the Japanese framework focuses on thinking skills, supported by basic skills and guided by practical skills.

The Korean framework is a parallel interactive structure that includes six aspects as mentioned above.

3.2.3 Different Cultivation Emphases

By comparing the key competencies frameworks of the four countries, it's found that New Zealand, Korea, and Japan emphasize the cultivation of core values, while China generally focuses on "key competencies" and neglects "essential character" (Liu Yue, Shen Xiaomin, 2020) [7]. In Singapore's framework, core values are placed at the center of the framework. The key competencies framework of Korea also includes values such as respect for others and compassion, and places emphasis on developing the values and attitudes8. Japan's 21st century competency framework not only just place emphasis on the acquisition of competencies, but also the cultivation of values. While the framework of "Developing Key Competencies of Chinese Students" does not specifically identify the "necessary characters" for lifelong development and social demands.

4 Suggestions for Subsequent Key Competencies Research

After comparative analysis, several enlightenment is obtained on how to conduct follow-up studies on key competencies in China.

4.1 Make "Key Competencies" Truly Focus on Core Elements and Central Issues

Li Xue and Sun Miantao (2017) believe that the fundamental characteristics of "key" are reflected in its specificity and uniqueness, so the key competencies should refer to the elements that are central and play a key role in student development [8]. Ding Nianjin also believes that the selections of Chinese key competencies are too broad in scope and have too many contents, which far exceed the scope of "key competencies" [9]. For example, the cultivation of cultural foundations is explained as emphasizing the acquisition of knowledge which is important but cannot be called a key competencies. Key competencies studies are purposeful and targeted to address the problems it faces now and the challenges that may arise in the future, so they cannot cover the entire spectrum without distinction.

4.2 Highlight the Hierarchy of Key Competencies

The Chinese key competencies framework is centered on cultivating a well-rounded person and includes three areas: cultural foundations, autonomous development, and social participation. It is worth noting that cultivating a well-rounded person is the ultimate purpose of key competencies development but not a key element. The three aspects of the framework are juxtaposed and difficult to distinguish in terms of importance and role relationships, which can lead to unfocused educational reform and difficulty in finding correlations among the elements. In contrast, in Japan, the specific elements of its 21st century-type competencies are in a bottom-up nested three-circle encompassing structure, with foundational power as the support, thinking power as the core, practical

power as the external manifestation, and survival power as the direction, presenting a distinct hierarchy and correlation. (Liu Yue, Shen Xiaomin, 2020) [7], and the Singapore 21st-Century Competencies Framework is divided into three layers, and the cultivation of core values is the core, social and emotional competence is the specific requirement, and 21st century competencies is the foundation, which also has a clear logic and correlation. Being hierarchical can reveal the internal connection of each element, strengthen the focus of cultivation, and reduce the difficulties in formulating and implementing related reforms.

4.3   Reinforce the Cultivation of Values

Many scholars have found that the key competencies frameworks developed in Asian countries focus more on the cultivation of values. China has been emphasizing students' attitudes and values education since the implementation of the basic education curriculum reform in 2001. Documents released by Ministry of Education in Chins clearly require the integration of cultivating and practicing socialist core values into the whole process of national education. However, core value cultivation has not been put in a very prominent position in China's key competencies framework. While Singapore uses values as the value orientation to build the key competencies framework. Some scholars suggest that China should build the theory and framework of key competencies with the value orientation of cultivating a well-rounded human being. In conclusion, Chinese education policy makers should rethink the importance of values in the key competencies framework.

4.4   Take Both National Characteristics and Trends of the Times into Account

Chinese key competencies research should adhere to ethnicity, highlight Chinese characteristics, and build educational and cultural confidence. The development of the key competencies framework is deeply rooted in China's excellent traditional culture. With localized characteristics, the focus on exercise and health echoes the goal of cultivating a well-rounded person. Among 18 key competencies indicators extracted by Shi man et al. (2016), China pays less attention to the cultivation of environmental competency, financial competency, and leadership, which are the new requirements for talent cultivation in the new era. Therefore, Chinese key competencies researches should be rooted in Chinese culture and integrated into the trend of the times.

5   Conclusions

With brief introduction and systematic comparison of the key competencies selections and frameworks of China, Singapore, Korea and Japan, I found that the four countries show great interest in similar areas like higher-order cognition, and personal growth dimensions, while the framework structures and cultivation emphasis are different. Based on the comparison result and the reality of China, four suggestions for China's subsequent key competencies research are put forward: "key competencies" should truly focus

on core elements and central issues; the hierarchy of key competencies should be highlighted; the cultivation of core values deserves more emphasis; China's subsequent key competencies research should take both national characteristics and trends of the times into account, thus keeping pace with the age and meeting requirements of the times.

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