

Professional Development of International Chinese Teachers Based on the Complex Dynamic Theory

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ABSTRACT

From the perspective of complex dynamic theory, this paper analyzes the definition, characteristics and path of the professional development of international Chinese teachers, and further explores how to improve the professional development of international Chinese teachers in the new era. After re-examining and reflecting on this issue by means of concepts such as global outlook, social demand orientation, cross-cultural teaching and communication skills, big data technology, and integration of industry and education, it can be found that the professional development of international Chinese teachers is not a closed, static, homogeneous and self-contained system, but an open, dynamic, non-linear, and self-adaptive system. The development of comprehensive capabilities is an important manifestation of its professional development. This research is based on the theory of complex dynamic systems, combined with China's humanistic initiative of the "Belt and Road", to give a more comprehensive and in-depth explanation of the professional development of international Chinese teachers, which has reference significance for related research.

Keywords: *International Chinese teachers, developing paths, teaching ability, self-reflection ability*

1. INTRODUCTION

In recent years, as China's national strength has increased, international Chinese education has made remarkable developments. According to the data from Former Hanban (Office of the National Leading Group for Teaching Chinese as a Foreign Language), China has established 541 Confucius Institutes and 1,170 Confucius Classrooms in 162 countries /regions by December 2019. The "Report on the Development of Chinese Language and Characters 2017" pointed out that 67 countries and regions around the world have incorporated Chinese language teaching into the national education system through the promulgation of laws and decrees. In terms of international students in China, statistics from the Ministry of Education show that the number in 2017 reached 489,200, and the growth rate has remained above 10% for two consecutive years. There is a great demand for international Chinese teachers. For learners have different nationalities, cultures, languages, races, ages, and religious backgrounds, so international Chinese teachers must have interdisciplinary knowledge and intercultural competence, etc. The Ministry of Education document Promoting the Joint Construction of "The Belt and Road"- Educational Action puts forward the propositions of the times regarding the training of international talents in the "Belt and Road" countries. Therefore, the characteristics and paths of the professional development of international Chinese teachers as well as its interpretation are worthy of in-depth study.

2. THE DEFINITION OF THE PROFESSIONAL DEVELOPMENT OF INTERNATIONAL CHINESE TEACHERS

Teachers' professional development is a dynamic developing process of continuous improvement of the professional quality and structure. It is also an independent developing process for teachers gradually becoming mature as educational and teaching professionals. It has the characteristics of initiative, effectiveness, individual independence and inherent relativity [1]. From initially entering the workplace to becoming an outstanding practitioner, teachers are affected by various internal and external factors [2]. Successful professional development depends on the working conditions of teachers and the way they perceive themselves in this framework, which is crucial to the maintenance of teachers' career [2]. Therefore, the professional development of international Chinese teachers can be defined as "the continuous development of the individual teacher's continuous exploration of time, including the enhancement of beliefs in international Chinese education, the updating, broadening and deepening of knowledge and skills in Chinese and related subjects, and the ability to produce time knowledge and the ability to cooperate with colleagues in the international Chinese education community, and eventually grow into a learning, reflective and research-oriented teacher." [3]

The complexity of science changes our worldview and way of thinking. Using complex thinking paradigm to reflect on simple thinking paradigm can promote the innovation of

human concepts and methods. After re-examining and reflecting on the existing teachers' professional development based on the perspective of complex theory, we found that teachers' professional development is not a closed, static, homogeneous, and self-sufficient system, but an open, dynamic and complex system in which nonlinear, heterogeneous, and adaptive elements interact. Therefore, it is not enough to simply study teachers' learning process, and formative intervention researches must also be conducted [4]. The complex dynamic theory not only helps to explain the elements of teachers' professional development objectively, comprehensively and scientifically, but also helps to understand the universality and particularity of teachers' professional development. Looking at the definition of the professional development of international Chinese teachers from the perspective of complex dynamic theoretical system, we believe that the professional development of international Chinese teachers depends on complex and diverse environmental factors such as education policies, education systems, subject orientation, social needs, economic levels, etc.; The professional developing process of teachers in different countries has different developing priorities at different stages, showing different developing paths, and then presents the characteristics of country-specific and non-linear development, and finally achieves the purpose of improving the comprehensive ability of teachers (including language ability, body language ability, human sensory system, subject knowledge, background knowledge, teaching experience, values and other abilities); Different standards should be proposed for teachers in different periods and at different stages, guiding them to grow into those with active learning ability, reflective ability and research ability. Teachers' professional development is a complex dynamic system affected by many factors.

3. CHARACTERISTICS OF THE PROFESSIONAL DEVELOPMENT OF INTERNATIONAL CHINESE TEACHERS

3.1. The Professional Development of International Chinese Teachers is Complex and Dynamic

Society, culture, politics, economy, education, systems, and the Internet constitute an environment for available education, and all system elements are open systems themselves. The professional development of international Chinese teachers is a complex dynamic system composed of various systems such as available education environment, teaching objects, teaching content, teaching goals, teaching evaluation, teaching experience, and years of experience. In this complex dynamic system, the availability of educational environment, teaching objects, teaching content and other systems interact with each other, restrict each other, and are interdependent, forming a

dynamic and interwoven network architecture. Each element in the system itself is also a complex dynamic system, and is also composed of its own sub-systems. Under the interaction of these subsystems, new phenomena and new representations are constantly emerging. Every subtle change in the system will cause major or minor changes to the professional developing system of teachers. In this system, the teacher subject realizes their own professional development through demand, perception, learning and frequency in the real education and teaching process.

Teacher subject includes individual teachers and teacher groups, and we will not make a detailed distinction in this article. There are characteristics of diversity and unity between individual teachers and teacher groups. Teachers themselves can be regarded as a complex dynamic system, whose influencing factors include social background, cultural background, political background, educational background, family background, values, as well as teaching environment and teaching experience, etc. These factors present different situations and seem to be unrelated to each other, but in fact they are closely related and interact with each other. Teachers should consciously pay attention to their own professional development, actively learn professional knowledge, and continuously accumulate teaching experience. It can be said that the speed of teachers' professional development is often affected by the teacher subject.

The effects of each system are mutual. When one system acts on another system, it will inevitably be countered by the other. The core of the professional development of international Chinese teachers is the process of continuous self-reconstruction and self-complication through learning, practice, and reflection under the influence of multiple factors. In the process, a spiral upward development model is formed to adapt to the teaching environment of different countries, and complete the teaching tasks of different stages. With the development and changes of society, cultural, technological and operational capabilities have become the foundation of the high complexity of society and the core of the high complexity of human beings. Teachers' professional development is not a completely self-sufficient system. This is because its existence and development require the human brain, human sensory perception system and biologically evolved life with other factors to work together.

3.2. The Professional Development of International Chinese Teachers is Nonlinear

The professional development of international Chinese teachers is not a closed system. Its development is not only the internal energy of the system, but also negative entropy, that is, complex organization and information. Teachers' physiological system, professional system and developing system are all open systems, and they are mutually inclusive among them and between them and the external environment. The international Chinese teachers'

professional developing System is not only a part of another system, but also self-contained. For the teacher subject has a high degree of complexity, so it enjoys the greatest freedom and dependence in human society. Similarly, the greater the freedom of the international Chinese teachers' professional developing system, the greater the dependence on the education and teaching system.

Many individuals that affect the professional development of international Chinese teachers are not done in a simple superposition method, but randomly generated new relationships of opposition, competition, and complementation under the interaction of many individuals. The change in the professional development of international Chinese teachers is a non-linear phenomenon. Even a slight change in the motivation of the professional development of teachers may cause qualitative changes in the professional development system of teachers. This cause and effect are disproportionate. The phenomenon of change is a nonlinear dynamic change. In a linear system, the combined effect of two different factors is just a simple superposition of the individual effects of each factor. In a nonlinear system, a tiny factor can lead to dramatic results that cannot be measured by its magnitude. The professional development of international Chinese teachers will be affected by factors such as society, politics, economy, values, subject knowledge, background knowledge, and teaching experience. The changes in the professional development of international Chinese teachers are random and unpredictable. When far away from the state of balance, the professional development of international Chinese teachers is affected by external factors, and one or more communicative individuals may undergo sudden changes. At the same time, individual teachers themselves also have a process of self-regulation, forming with other subjects the relationship of adaptation, variation, competition or complementarity in the same system. In short, the available environment in the professional developing system of international Chinese teachers is full of needs and requirements, opportunities and restrictions, rejections and invitations, permits and constraints. Since each element is affected by other different factors, and each teacher subject has different previous experience, so even if the subject knowledge and teaching experience are exactly the same, it is impossible to have exactly the same professional development process and professional development results. Therefore, only using a simple linear method will not be able to recognize the formation rules and characteristics of the developing system of international Chinese teachers.

3.3. Comprehensive Ability Development is the Embodiment of the Professional Development of International Chinese Teachers

Comprehensive ability development is the embodiment of the professional development of international Chinese teachers. Teachers continue to accumulate experience according to different educational and teaching

environments, different teaching goals and different teaching contents, and continue to improve their professional development under the promotion of reflective ability. The comprehensive ability of human body includes comprehensive coordination abilities such as language ability and body language, human sensory system, subject knowledge, background knowledge, teaching experience and values. The professional developing environment of teachers includes any information that can be touched by the five senses or synaesthesia. Visual and auditory channels are the main ones for information input, while touch, smell and taste are auxiliary channels for information input. Sometimes, multiple senses are required to cooperate to complete information input. According to teachers' different professional backgrounds, different cognitive resources are invested, and different cognitive processes and cognitive results will be obtained. By investigating the multi-modular cognitive model of teachers, it is helpful to study the process of teachers' professional development and summarize the laws and characteristics of the development.

The professional developing process is not linear. Various pulling forces make it sway up and down, or even go backwards. Professional development continues to cycle. Although the direction of the cycle is the same, the trajectory of each return will be slightly different. The consistency of professional development motivation and purpose depends on the frequency of system circulation, and frequency determines the degree of similarity. The more complicated the social relationship, the higher the intellectual requirements of the brain and the larger the cortex. In this sense, the strength of professional development depends on the number of cognitive modules and the type and number of communicative situations or knowledge content mastered. This is because human brain power is limited. The amount of information that can be captured by recognizing the five sense organs, the number of communicative fields used in play-acts, and the number of concepts mastered are all factors that influence the professional development of international Chinese teachers.

4. THE PROFESSIONAL DEVELOPING PATH OF INTERNATIONAL CHINESE TEACHERS

Countries and regions in the world have uneven developing levels. There are both developed and developing economies. A single concept cannot be used to cultivate a multi-level, multi-type, flexible and diverse international team of Chinese language teachers. It is necessary to implement the point-to-point connection and line-to-surface strategy, make breakthroughs in key points and advance practically, so as to form a network path for teachers' professional development gradually.

Under the guidance of the international Chinese teachers' professional development model based on the reflective model, Wang Tianmiao divides the professional development path of teachers into the following six types:

the first one is to establish a professional growth portfolio; the second one is to use reflective teaching concepts and methods during teaching practice; the third is to use microteaching method to promote teachers' reflection and mutual exchange and reference; the fourth is to use action research paradigms to guide teachers' educational practice and research; the fifth, Using educational narrative research methods to prompt teachers to reflect more deeply on the real situations in the educational world; the sixth is to build a professional learning community for teachers, so that teachers' perceptual practical experience can be upgraded to rational and systematic knowledge [3].

There are six main professional developing paths for international Chinese teachers: lifelong learning, action research, teaching reflection, peer mutual assistance, professional guidance, and project research. Among them, lifelong learning is the prerequisite guarantee for teachers' professional development; action research is the basic way for teachers' professional development; teaching reflection is the indispensable way for teachers' professional growth; peer mutual assistance is an effective method for teachers' professional growth; professional guidance is an important condition for teachers' professional growth; and subject research is an effective carrier for teachers' professional growth.

The professional development of international Chinese teachers is a process of novice teachers growing into expert teachers, as well as a process of continuous development and improvement of teachers' international Chinese teaching ideas, teaching knowledge and teaching capabilities. While the mutual aid and collaboration among teachers produce a number of benefits that have significant impacts on their professional lives, thus playing an important role in the strategy of teachers' professional development [5]. The background of the learning society has made the view of life-long learning widely valued, and teachers are direct practitioners. These factors have become the driving force to promote teachers' independent learning and continuously improve their professional levels.

5. THE PROFESSIONAL DEVELOPING ORIENTATION OF INTERNATIONAL CHINESE TEACHERS IN THE NEW ERA

5.1. Establishing the Concept of a Global View and Accurately Positioning the Macro Goals of Teachers' Professional Development

The vision of the "Belt and Road" requires teachers' professional development to establish a global outlook. The programmatic document Promoting the Joint Construction of the "Belt and Road" -Educational Action issued by the Ministry of Education focuses on the connectivity of policy, infrastructure, trade, finance and people, known as "The Five-Connectivity Program" of the "Belt and Road" construction. The countries along the "Belt and Road" are

mutually dependent, with a long history of educational exchanges and broad prospects for educational cooperation. Under the framework of the "Belt and Road", all countries along the route join hands to promote the common prosperity of education, which clarifies the global perspective of teachers' professional development from policy. As everyone knows, UNESCO actively promote "global citizenship" education and cross-cultural education, the E.U's foreign language education policy embodies the spirit of "foreign language education for intercultural citizenship", Japanese scholars put forward the concept of "global education" and carry out quality education necessary for "multicultural coexistence". We believe that the cultivation of a global vision for the professional development of international Chinese teachers in the "Belt and Road" initiative should conform to the mainstream of international values.

5.2. Guided by Social Needs, Determining the Specific Direction of Teachers' Professional Development

Social needs determine the goals and directions of the professional development of international Chinese teachers. Traditional training for Chinese language teachers mainly focuses on training general Chinese talents. In the new era, the interdisciplinary setting of Chinese and other disciplines has enhanced the purpose and practicality of Chinese learning, such as business Chinese, medical Chinese, military Chinese, legal Chinese, energy Chinese, sports Chinese, etc., focusing on cultivating specialized teachers who are proficient in the use of Chinese in a certain field, which is the direction of teachers' professional development. With the continuous expansion of the breadth and depth of exchanges between China and other countries in the fields of politics, economy, culture, science and technology, there is an increasing demand for high-level Chinese talents around the world. Having interdisciplinary knowledge has become the main goal of teachers' professional development. Social demand not only requires teachers to have teaching ability, adaptability, cross-cultural communication ability, foreign language proficiency and psychological quality, but also promotes the cross integration between Chinese language and foreign languages, history, philosophy, management, finance, architecture, energy and other disciplines. In short, international Chinese teachers must adhere to the professional developing concept of openness, tolerance and sharing, and be able to serve the needs of China and the countries along the "Belt and Road" in the fields of economy, education, military, law, energy, medicine, etc.

5.3. Improving Teachers' Professional Quality, Possessing Multilingual Intercultural Communication Skills and Teaching Ability

The construction of the "The Five-Connectivity Program" with the aim of win-win cooperation has been rooted in a multilingual and multicultural environment from the very beginning. The training of international Chinese teachers for the "Belt and Road" needs to be multilingual and multicultural. The construction of the "Belt and Road" involves different countries and different cultural traditions. The cultivation of teachers under the multicultural background must take into account multilingual and cross-cultural elements, while the professional development of teachers implicated in the construction of the educational community must cultivate multilingual intercultural communication skills and teaching skills. The languages and cultures of different regions and countries collide and exchange, showing a process from conflict to acceptance and then to integration. China advocates respecting and protecting multiculturalism in the process of globalization, which has become the consensus of many international organizations such as UNESCO and the European Union.

5.4. Relying on Big Data Technology to Build a Professional Developing Platform of Teachers

In the context of the in-depth integration of big data technology with economic, educational and social development, the continuous promotion of "Internet plus teachers' professional development" is of great practical significance for enhancing the professional development of international Chinese teachers. To this end, it is necessary to integrate the latest technologies such as mobile Internet, cloud computing and artificial intelligence to build an international professional developing platform for Chinese teachers in an all-round way to leverage the advantages of big data to timely and effectively track the professional developing trend of worldwide international Chinese language teachers, realizing the real-time transmission and sharing of teaching resources, and enhancing core competitiveness of the international Chinese language teachers.

5.5. Deepening the Integration of Industry and Education, Guiding Teachers' Sustainable Development That Combines Theory and Practice

The professional development of teachers should deepen the integration of industry and education, and guide the in-depth integration of professional theoretical literacy and practical ability of teachers to achieve sustainable development. Currently, the language industry is quietly becoming a new economic growth point. To better promote Chinese teachers' professional development, it is necessary

to deepen the integration of industry and education, Strengthen the combination of theory and practice. At the end of 2017, the Several Opinions of the General Office of the State Council on Deepening the Integration of Industry and Education issued by the General Office of the State Council pointed out that it is necessary to deepen the integration of industry and education and promote the organic connection of the education chain, the talent chain, and the industrial chain. It is necessary to grasp the distinctive features of Chinese language and culture, and give full play to the competitive advantages of the global Chinese education market. In line with the law of market development, a flexible industrial operating mechanism will be gradually formed, and a new era of language and cultural industry with Chinese characteristics will be opened. In this way, the optimal allocation of social resources can be realized, and the sustainability of teachers' professional development can be guided.

6. CONCLUSION

The professional development of international Chinese teachers is an interactive system of various elements. The professional ability of teachers is generated in the process of interaction of various elements, and the professional development of teachers exists in the actual teaching and learning activities. The process of this activity includes the interactive factors between the teacher subject and the environment, it also reflects the various professional abilities of teachers themselves.

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