



Comparing the key teacher competencies and the training process between China and Catalonia

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“Once you have learned to ask questions – relevant and appropriate and substantial questions – you have learned how to learn and no one can keep you from learning whatever you want or need to know.”

Neil Postman and Charles Weingartner

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Abstract

The aim of this thesis was to compare the differences and similarities of the primary teachers' key competencies and the pre-service teachers training programs between China and Catalonia. Based on the analysis of two different social culture contexts, education systems and the teacher related policies in China and Catalonia, this research developed a synthesized theoretical framework of teacher key competencies which was used to conduct the two comparative studies on teacher key competencies through a cross-cultural perspective.

Study I was aimed at comparing the most valued key competencies and professional goals of a sample of 276 primary school teachers from Catalonia and China. An open-ended questionnaire was used to collect data in both locations. The results showed that the main difference is that Chinese teachers believe knowledge competency as the most valued competency among the eight key competencies, while for Catalan teachers, learning to learn competency is the most valued one. Additionally, the main professional goals for Chinese teachers are linked to their own professional development, while for Catalonia teachers the goals are more focused on their students' development.

Study II was aimed to compare the Chinese and Catalan teacher education process and to know which and how the key competencies were trained by their teacher education programs. The documents of three cases (teacher education programs) and interview (of program designers) were used to collect data, and the content analysis method was used to analyze the collected data. The results showed that both Chinese and Catalan primary teacher education programs have mentioned of training the eight categories of key competencies to their future teachers, while they attached important to different aspects

and applied different training methods in their training process. These differences can be explained by the following results: 1. Chinese programs are emphasizing on training the specialized teachers with the subject matter knowledge, pedagogical skills, research ability, as well as professional attitudes and ethics. Whereas, the Catalan program was emphasized to train the student teachers for teaching cross-curriculums/subjects with critical thinking, inclusive teaching skills, social and culture awareness, as well as communication and cooperation skills. 2. Chinese educators used to use the teacher-centered method to teach and apply the knowledge-based method to evaluate their students, while the Catalan educators adapted more learner-centered teaching methods and flexible evaluation methods in the future primary teachers' training process. 3. China has multiple channels to train the future primary teachers, while the Catalan primary teacher education is unified by the Spanish Central Government in both of the credits and the curriculums.

These two studies provided the data-based evidence for answering these two questions: “whether there is a set of competencies that can be considered as key cross countries that differ in culture and perspective, and which factors should be considered for the cross-culture comparative studies of teacher competencies” (OECD, 2005). Moreover, the evidence-based recommendations and applications could be benefit for the policymakers, researchers, designers in the future teacher education and training. Meanwhile, the synthesized model of teacher key competencies can provided a reference for future international comparative studies on teacher competencies. Last but the least, this thesis could build a bridge for future cooperation on the teacher competencies training between Chinese and Catalonia (Spain).

Resumen

El objetivo de esta tesis es comparar las diferencias y similitudes de las competencias docentes claves de los maestros de primaria y el proceso de formación entre China y Cataluña. A partir del análisis del contexto cultural y de los sistemas educativos, se desarrolló un modelo teórico para comparar las competencias claves del profesor entre China y Cataluña a través de Estudio I y Estudio II.

El *estudio I* tuvo el objetivo de comparar las competencias claves más valoradas y metas profesionales de una muestra de 276 profesores de la escuela primaria de Cataluña y China. Se utiliza Un cuestionario abierto para la recolección de datos en ambos lugares. Los resultados mostraron que la principal diferencia es que los maestros chinos consideran la competencia del conocimiento como la competencia más valorada entre las ocho competencias claves, mientras que para los maestros catalanes, aprender a aprender es la competencia más valorada uno. Además, los principales objetivos profesionales para los maestros chinos están vinculados a su propio desarrollo profesional, mientras que para los profesores de Cataluña los objetivos se centran más en el desarrollo de sus estudiantes. Así, esta investigación ofrece una nueva perspectiva para obtener una mejor comprensión del papel que juegan las competencias clave para los maestros de primaria chinos y catalanes, y beneficiará a las aportaciones futuras de estudios sobre la formación docente desde una perspectiva intercultural.

El *estudio II* tuvo como objetivo comparar los programas de formación de profesores chinos y catalanes y conocer qué competencias clave y cómo son desarrolladas en sus respectivos programas de formación del profesorado. Para ello, se recurrió al análisis de contenido de tres casos (programas de formación del profesorado) y entrevistas. Los resultados mostraron que las principales diferencias se encuentran en que: los

programas chinos ponen el énfasis en la formación de profesores especializados (un maestro por signatura), en el conocimiento de la materia, en las habilidades pedagógicas y en la capacidad de investigación, así como en las actitudes y ética profesionales. El programa catalán, por su parte, destaca la promoción en los maestros de competencias para la enseñanza de diferentes materias o interdisciplinariedad, el pensamiento crítico, la enseñanza inclusiva, la conciencia socio-cultural, así como habilidades de comunicación y cooperación. 2. Los formadores de profesorado de primaria chinos utilizan más los métodos de enseñanza centrados en el profesor y la evaluación basada en el conocimiento, mientras que los educadores catalanes se basan más en métodos de enseñanza centrados en el alumno y en métodos de evaluación flexibles en la formación de futuros maestros primarios. 3. En China hay múltiples modelos de formación del profesorado de primaria, mientras que en Cataluña existe un solo modelo que responde al establecido por el gobierno central español en cuanto al currículum y la cantidad de créditos.

Estos dos estudios proporcionan evidencia basada en datos para responder a la cuestión de "si existe un conjunto de competencias clave que pueden ser consideradas transversales en países que difieren en cultura y perspectiva, y qué factores deberían tenerse en cuenta en los estudios comparativos interculturales de las competencias del profesorado" (OCDE, 2005). Aún más, esta investigación proporciona recomendaciones y propuestas de intervención basadas en la evidencia. Esta tesis ha desarrollado un modelo de las competencias clave del profesorado que proporciona una referencia para futuros estudios comparativos internacionales sobre competencias del profesorado. Por último, esta tesis sienta las bases de un puente para la futura cooperación en la formación de competencias entre los China y Cataluña (España).

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I. Justification of the research problem

1.1 The general background

The educational quality and equality are two hot topics in current international education research (Schleicher, 2012). Over the past decades, the Organization for Economic Co-operation and Development (OECD) launched two large-scale international surveys - International Student Assessment (PISA) and Teaching and Learning International Survey (TALIS), which have become the world's premier yardstick for evaluating the education quality on students and teachers (OECD, 2014a). These two programs provide cross-country comparative data which are used to inform evidence-based policy making and improving the educational quality and equality in international level (He, 2015). However, without considering the educational culture contexts, education systems and teachers' roles in each participated country, it is difficult to deeply understand how these international comparative results happened.

Numerous researches illustrated competent teachers have a long-lasting positive impact on student learning and development (Brussels, 2007; Caena, 2011; Cots & Nussbaum, 2008; Harris & Sass, 2011). Moreover, teacher competency is an important index of teacher quality which plays a crucial role in the student learning (Conway, Murphy, Rath, & Hall, 2009; Darling-Hammond & Bransford, 2005; Francesca Caena, 2011). PISA research provides cross-country comparisons in students' achievement, while the TALIS researches lack the understanding and comparing teachers' competencies through a cross-culture perspective (Halász & Michel, 2011; OECD, 2014b; TALIS, 2010).

In China, the PISA research shows that the Chinese (Shanghai) students' achievement recently ranked in the top among all participating countries (OECD, 2010 and 2014a), but it is difficult to infer the whole Chinese education quality. Because of

the rapid development of Chinese economy and the acceleration of the modernization process, it brings a lot of problems and challenges on education quality and equality (Feng, 2008; NAEP, 2013). According to a survey, there are only 11.2% of people who believe the current basic education is equitable (Wang, 2009). The problems mainly reflected in two aspects of Chinese basic education. First of all, the educational resources are not balanced in the urban and rural areas (Yang, 2000, Chu, 2006). The teacher's quality is lower in schools in rural areas than in urban areas (Yang, 2000, Chu, 2006). Secondly, the educational opportunities are unequal for migrant workers' children, for instance, migrants' children have not been accepted by the city public schools (Yang, 2007). In addition, another important unequal problem in exam-oriented education was that teachers pay more attention to high academic achieved students, and students with high social economic family background (Li, 2005; Qu, 2006). Since 2006, the Chinese Central Government realized the problems and attached great importance on improving the educational equality by implementing a series of policies (MEPRC, 2007, 2010, 2011, 2013).

In 2007, the Ministry of Education of People Republic of China (MEPRC) decided to implement Free Teachers Education Policy (FTEP) in six normal universities directly under the Ministry of Education (MEPRC, 2007). This is an important policy to promote the China education equality on teacher preparation in poor areas. The FTEP is aimed to train a large number of outstanding primary and secondary teachers to work in rural areas (Qin, 2007; Jin, Li, Ding & Li, 2013). In 2010, National long-term Education Reform and Development Plan (2010-2020) was enacted by MEPRC, declared that both education quality and equality are important for social justice and development (MEPRC, 2010). This plan clearly put forth the direction of Chinese Education reform,

including reform for teacher force development in the next decade (MEPRC, 2010). Subsequently, in 2012, the Chinese Ministry of Education and relevant ministries jointly issued six documents to enhance the basic education of teachers' quality and to support teacher professional development at the national level (MEPRC, 2012). In 2012, the policy of reform for *Teachers Qualification Examination and Periodical Registration System* was issued and started to implement in the national level (MEPRC, 2013). This policy aimed to improve the standards of teacher education and selection. However, teacher competency serves as an important index of teacher quality which was not clearly pointed in Chinese educational policies (Conway, Murphy, Rath, & Hall, 2009; Francesca Caena, 2011; Zhang, 2013).

Meanwhile, the European Commission (EC) issued a series of policies on teacher (key/core) competence(y) for improving European teachers' quality in recent decade (European Commission, 2005, 2006, 2007a, 2007b, 2008, 2011a, 2011b, 2012a, 2012b, 2012c, 2013). All the policies provided a reference for European countries and international teacher competence research. For instance, the program of Defining and Selecting Key Competences Project (DeSeCo) work in the area of competencies and develop a coherent strategy for defining, selecting, and measuring competencies (DeSeCo, 2001, 2002).

The Spanish Government highlights the European policies on key competencies, which have great importance on the improvement of teacher quality and student achievement through new education law (LOMCE, 2013). Moreover, the inclusive education is also addressed in teachers' training curriculums to improve education equality (LEC, 2009). In Catalonia, the Catalan Government launched the project of ARMIF which aimed to improve the education quality through improving the teacher

training quality (GCG, 2015). Furthermore, the Catalonia education keeps addressing inclusion and diversity in education which is considered an important factor in improving education quality and equality. According to the Education Department of the Catalan Government (Series, 2000-2010), there were 15.6% of 1.183.907 immigrants in total. In 2012, Catalonia had 14.1% of 60.489 foreign pupils in total (Series, 2000-2010). The Catalan Government pays high attention to the education of immigrants' children. All these children were accepted in normal schools and received special training on Catalan language and culture through courses and activity (XTEC, 2012). For example, the "reception classroom" ("Aula d'Acollida") allows personalized attention, emotional curriculum, and intensive learning of the Catalan language for immigration students. These students start to attend the reception class until the language reaches the same level as another classmate (XETC, 2013). The approach of the "reception class" is flexible, depending on the needs of students who attend and the organizational culture of each center (IES, 2014). It is recommended that the maximum number of students working simultaneously in each group will be around 10 students (IES, 2014). Therefore, teachers who teach in reception classroom should have competences of culture and cross-culture.

The PISA assessment shows that Spain (including Catalonia) performs below the OECD average in student academic achievement in reading, mathematics, and science (PISA, 2012). According to the PISA report (PISA, 2012), students with an immigrant background score significantly lower than non-immigrant students in Spain. Moreover, as the primary education is more inclusive, teachers pay more attention to the low-performing students. Thus, the results of Spanish student achievements seem to be influenced by the student social background, the education form, and teacher's

perspectives of teaching. On the other hand, a critical problem for Spanish education and other countries is improving the student academic achievement at the same time for keeping the education equality.

Although Chinese and Catalan (Spain) governments meet different challenges of improving the education quality and equality, they share a same method of solution these problems by training competent future teachers. Because of that the competent teachers have a long-lasting positive impact on student learning and development (Brussels, 2007; Caena, 2011; Cots & Nussbaum, 2008; Darling-Hammond, 2000; Harris & Sass, 2011). In order to improving the student learning, it should emphasize on the teacher quality and teacher education quality. Thus, in this research, we will not only focus on which key teacher competencies are important for Chinese and Catalan in-service primary teachers, but also analyze how these competences are trained (or not) at the university through their primary teacher training plans and programs. As the culture and education system differ, this research will introduce the backgrounds of Chinese and Catalan cultural contexts and education systems. Based on this, the study is aimed at comparing the differences and similarities of the key teacher competencies between Chinese and Catalan primary teachers as well as their primary teacher education programs at the University.

1.2 Justification of the research problem

There is a common understanding of well-qualified teachers with professional knowledge, skills and attitudes have a positive impact on students' 'learning and development (Brussels, 2007; Caena, 2011; Cots & Nussbaum, 2008; Darling-Hammond, 2000; Harris & Sass, 2011). In recent years, a lot of countries are pursuing

of a common goal and making great effort on training more competent teacher and issued a series of polices in order to improve their educational quality and equality.

While, it seems that there is not a common agreement on which key competencies are the most important for future teachers in different countries. Although, the OECD project (DeSeCo, 2005) provided a framework of new competency domains, it said that it still need to more evidence-based researches to answer the question of “whether it is possible to identify a set of competencies that can be considered as key cross countries or even across culture that coexist within individual countries”.

China and Catalonia have different cultural contexts and education systems, whether there are common views on key teacher key competencies. In this research project, we will try to provide data-based evidence to answer above mentioned question. Moreover, as the Chinese and Catalan education systems differ, their primary teachers played different roles. One of the main tension points is “specialization” or “integration” and that could have an effect on the competencies and on their initial training.

In China, teachers’ specialization is highlighted, because teachers should help students to learn deeper knowledge in each subject (Liao, 1999; Lei, 2006). In Chinese schools, one teacher teaches per subject. In order to support each teacher’s professional development, every province, city, town, and school sets a special institution called “Teaching and Researching Office” (TRO) (Deng, 2005; Han, 2007). Specifically, in this kind of institution, there are a lot of experienced educators who are responsible for directing and supporting teachers’ subject skills on didactics and researching of subject content, such as how to work together to plan and design a unit plan, how to research

and develop teaching content or deeper knowledge; how to assess students, and so on (Deng, 2005; Han, 2007; Lu, 2008; Sargent & Hannum, 2009; Wang, 2002). These kinds of institutions promote the development of Chinese teachers' pedagogical and research skills of each subject area.

However, an important problem is that teachers' specialization caused teachers to care more about students' achievement and ignores student's personality development (Zhao & Wang, 2001; Huang, 2009). In 2014, the Chinese Ministry of Education implemented "Opinions of the Excellent Teacher Training Program". It demands to explore the teachers training modes for preparation of excellent primary school teachers who are in love teaching, knowledgeable, fully capable of teaching multi-disciplinary in primary school (MEPRC, 2014a). According to this policy, normal universities will be responsible for developing and preparing the new model to train future cross-subjects teachers' competencies. Many researchers pointed out that it should emphasize on the integration of pre-and in-service teacher education and training (Chen & Du, 2009; X. M. Zhang & Zhang, 2010). How can we make the cross-subjects teachers' competences and the integration of pre-and in-service teacher education in China?

In Catalonia, the primary education required a teacher to be able to teach student key competencies by cross-subjects and inclusive education. In 2013, according to LOMCE, primary school teacher should teach pupils these seven key competences which include *Competence of Linguistic Communication* (the domain of communication skills in different registers, capable of critical understanding in all media), *Mathematical Competence*, *Digital Competence* (new technologies, network security and critical assessment of its impact on society), *Learning to learn*, *Social and civic competences*, *Competences on sense of initiative and entrepreneurship* (personal autonomy,

knowledge of the world economy and appreciation of social and business environment), *Cultural awareness and expression* (the skills and knowledge which includes own and others' culture, respect for differences and appreciation of multiculturalism) (LOMCE, 2013).

Some researchers found that the teacher with specialized and systematical knowledge and skills are more supportive on student deeper learning and has positive effects on students' academic achievements (Darling-Hammond, 2005; Jensen & Nickelsen, 2008; Yang, 2009; Zhang, 2012). Moreover, according to some studies of curriculum (Darling-Hammond, 2005; Grossman, Schoenfeld & Lee, 2005), which found that an effective class is related with teacher's content-related understanding which goes beyond mastery of the subject content, and beyond common sense pedagogy, and sustained attention into the teacher education. Darling-Hammond (2000), pointed out that "well-qualified" elementary teachers could be prepared by both programs like a major is an elementary education degree for generalists who teacher multiple subjects to the same group of students or a degree in the field taught for specialists (e.g. reading, mathematics, special education). Thus, it could be a good way to provide the multiple channels for training primary teacher in both specialization and integration in China and Catalonia.

However, what key competencies are considered as the most important by Chinese and Catalan primary teachers? Which and how key teacher competencies are trained by Chinese and Catalan university teacher education programs? Based the two different cultural context and education system analysis, we will try to answer these two main questions through two comparative studies in this thesis.

II. Research questions and aims

2.1 Research questions

There are six specific research questions; the first three questions refer to the study I and the rest ones are answered by study II.

1. Which are the most important key teacher competencies considered by Chinese and Catalan primary school teachers?
2. Where did Chinese and Catalan teacher learn the reported key competencies?
3. How did Chinese and Catalan teachers' professional goals influence their perspectives of important key teacher competencies?
4. Which key teacher competencies are trained in current Chinese and Catalan primary teacher education programs?
5. How are these competencies (knowledge, skills, attitudes, and values) trained in Chinese and Catalan universities through courses and internship and what kinds of methods are used in their training processes?
6. What are the main similarities and differences of key teacher competencies and training processes between Chinese and Catalonia primary teacher education programs?

In order to answer these questions, two different studies were undertaken using the comparative method. The first study aims to know what the key competencies are for Chinese and Catalan in-service primary teacher and what are the similarities and differences. The second study is to know whether and how these key competences are trained in current university programs by curriculums, teaching methods, internships and evaluation.

Before starting to compare their teacher key competencies, we will first introduce and compare the education systems and related culture backgrounds between

China and Catalonia at *Introduction* section. Moreover, it's important to review key teacher competencies studies and develop a theoretical model for comparing Chinese and Catalan teacher key competences with reference to international experiences. Additionally, in *Study I*, we will design two open-ended questionnaires to know which kinds of key teacher competences are most important for Chinese and Catalan primary school works. Based on the model, content analysis was used to analyze the questionnaire data, and compared the similarity and differences of key competences by percentages for Chinese and Catalan teachers. Furthermore, in *Study II*, we will analyze the current primary teacher education programs in universities of both China and Catalonia, to check whether and how these key competences are trained in current teacher education programs. In this study, three cases universities were chosen, two of them are from China, the rest one is from Catalonia.

Therefore, this research tried to investigate key teacher competencies between China and Catalonia (Spain), which will provide the evidence-based suggestions and useful perspective for policymakers and program designers that can be applied to improve teacher education with consideration of education equality. Moreover, it will provide a reference for the international comparative study of teacher competences and teacher education, as well as a benefit for the understanding and cooperation of Chinese and Catalan primary education and teacher competences. Last but not least, it developed comparative key teacher competences model for comprehensive study in teacher competences.

2.2 Research Aims

The aims of the present two studies are mainly focusing on the following three aspects:

Study I is aimed at knowing the most important key competences considered by Chinese and Catalan primary school teachers and the main differences and similarities of their perceptions and reasons of such differences.

Study II is aimed at knowing how key teacher competencies are trained by Chinese and Catalan initial teacher education programs at the university and the main differences in curriculum design, competences, internship, as well as in teaching and evaluation methods.

Based on these comparisons of the main differences and similarities in above studies, this research tries to explain how these differences related to education system, policies, school organization and classroom size and culture between China and Catalonia. It will provide a new perspective to understand Chinese and Catalonia teacher competencies and improving the cooperation in teacher education and training.

III. Introduction

- **The Chinese and Catalan Educational and Cultural Contexts**
- **The Chinese and Catalan Education Systems**
- **Teachers-related policies in China and Catalonia**
- **Standards of professional competencies for teachers:
a competency framework for teachers**

China and Catalonia have different culture, values, education systems and teacher policies, which could influence the view of key teacher competencies and the teacher training programs (OECD, 2014). Therefore, it's necessary to introduce the background of Chinese and Catalan educational culture, education systems and related policies on teachers.

3.1 The Chinese and Catalan Educational and Cultural Context

The main differences of the social culture context in Chinese and Catalan have influenced their education forms and content. The Confucianism has played a very important role in the whole Chinese social, culture and education for a long time (Zhou & Yang, 2002; Huang, 2006). While, due to the Catalonia social and political development, the Catalonia social and culture develop to more diversity and autonomy in society and education. In the following sections, I will explain more specific aspects on the educational related culture context in China and Catalonia.

3.1.1 Chinese education related to social culture context

The Confucius' Educational Thought deeply influenced on Chinese educational ideology, philosophy and teacher's role (Huang, 2006; Liu, 2010). It was a powerful mechanism for implementing the ethical and social norms of Chinese society (Luo, Lin & Yang, 1995; Huang, 2006). Moreover, it recommended using the examination as an equal way to select talented workers in national level (Wang, 2002). Thus, the examination is still considered as an important and fair way in current educational evaluation and selection. Furthermore, according to Confucianism, it believed that the

traditional teachers were playing three roles, such as passing manner/ attitudes, teaching knowledge, and giving explanation to students' confuses (Han, 808). The "passing manner" means teacher should teach students the moral values, which was considered as the basis of education (MEPRC, 2005). The "teaching knowledge" is interpreted that a teacher should teach knowledge to student in order to adapt to life and society (Yu, 2008). The "giving explanation to students' confuses" means that a teacher should help students to solve confuses and problems which they met in learning process (Shu, 2005). The above mentioned roles are still deeply influenced current Chinese teachers' role and teacher competences.

Confucius, as a teacher, provided lots of famous words on teaching and learning (B. Hang, 2006; Reagan, 2004). He said "when I walk along with two others, they may serve me as my teachers" which expressed a relative fair relationship between teacher and students. Because that any person could be my teacher or teach me, given that he knew the knowledge ahead of me. I will select their good qualities and follow them, their bad qualities and avoid them. He also believed that a teacher should have a high moral cultivation to be a model of his students. This is expressed by an old Chinese words "the teacher's doing always has more influence on his students than the teacher's saying". These views had influenced the traditional teacher education. Even in today, it has lots of valuable reference to reflect and solve current China educational problem on the teacher education.

Meanwhile, the Chinese parents believe that the teacher plays an important role on their children education process (Liu, 2004). For instance, there is typical phenomenon that parents pay a lot attention and spend mounts economic capitals on

selecting a good school, some good teachers in school and out of school for their children.

Another important background is the competitive environment in Chinese schools. After 1980s, the exam-oriented education was more and more popular (Liu, 2012). This caused to teachers pays more attention on students 'academic achievement which was ignores the students' whole development (Zheng, 2010). Some researcher said it didn't follow the social and economic development, modern information technical time (Liu, 1995; Wang, 2001). Such as, the educational content, teaching methods are lack of application the knowledge into real life (B. Liu, 1995; D.P Yang 2000; S.C. Wang, 2001). Finally, the most distorted values of exam-oriented education are that it formulated a phenomenon on comparing the exam scores. Subject teachers compare each other between different classes; students compare their scores each other in class; and parents also like comparing their child's score to other family's students' scores (Liu, 2012; Chen, 2007). It caused a lot of stress by examination, students and teachers bared huge press both in physical fitness and psychological health (Chen, 2007).

3.1.2 Catalan education related to social culture context

Catalonia is an autonomous region of Spain, and has the own culture and language (Baidu, 2015). During the 1939 to 1975, it was the dark time of Spanish society, which the dictatorship of Francisco Franco had deeply influenced the Spanish education system. He forbade in Spain the renewal education movements that had been flourishing all around Europe during the last decades. After Franco's death, the Spanish government began to democratize the state. And the following years, the Catalonia as

one of new autonomous communities created won more autonomy rights. In 1979, the Catalan Statute established that the Government's Education Department would be responsible for the educational system administration (Edwards, 1999).

In recent decades, the Spanish government tries to make the educational decentralization in Catalonia (Engel, 2008). Autonomous is a key feature to understand Catalan education, since the education law regulates the education system in order to foster creativity and freedom (LEC, 2009a; ERCMLL, 2013). The Catalonia education system is based upon respect for fundamental rights and freedoms, and in equality of opportunities (Edwards, 1999). The Organic Law on Education defines the public education service as a vital service to the community that can be provided by the public authorities and through social initiatives in order to guarantee citizens' fundamental rights (LEC, 2009a). Furthermore, due to the history and culture reasons, Catalonia education highlighted the Catalan language (Molinero, 1989; Vila-Pujol, 2007). Catalan is the language which used in instruction of Mathematics, Science, and others. Additionally, the Catalan education system also provides Spanish course and foreign language course which is usually English in public schools (Mar-Molinero, 1989; Xtec, 2006).

The constructivism presented an ideological concept to Spanish education, which deeply influenced the curriculum and teaching methods (Rodríguez, 2011). Based on the constructivism, the learner-centered pedagogy was highlighted and applied in current teacher education and school teaching. Rodríguez (2011) pointed that the strong connections between the learner-centered pedagogies and neoliberal ideology during 1980s and 1992s in Spain. The educational goals are trying to train critical thinkers, teaching for meaning, transformative teaching, and child-centered pedagogies

(Rodríguez, 2011). A more autonomous and independent student will successfully undertake the major challenges demanded by democratic regimes. These educational ideas were developed through several education reforms.

Moreover, the inclusive education is highlighted in Catalan education schools (GCDE, 2015). In 2012, Catalonia has 1.183.907 immigrants which take 15.6% in total of 7.565.603 people (Climent-Ferrando, 2012). An increasing number of foreign pupils are coming to compulsory education in Catalonia without being familiar with the Catalan language (Ianos, 2014). Bearing in mind this new social and cultural reality, the Department of Education of the autonomous government provides “Aula d’Acollida” called “welcome classroom” which help immigrant students to learn the language and culture of Catalonia in order to ensure that they feel welcome (Xtec, 2006; Ianos, 2014). These strategies are devised to facilitate rapid communication in Catalan in order to boost their active participation in the schools programs and to communicate with their environment (Ianos, 2014). According to the article 10.2 of Law 12/2009, Education of Catalonia (LEC), “Students entering in the educational system without knowledge of one of the two official languages has the right to a specific linguistic support” (LEC, 2009). Language education centers provide newcomer students with a personalized reception and a linguistic attention allowing them to start the learning of Catalan (XTEC, 2009).

Another aspect of inclusive education is shown in cross-culture. Schugurensky and Myers (2008) reported that there are practical difficulties in making intercultural education a substantial element of inclusion in both primary and compulsory secondary education in Europe. The Catalan education system, has developed a series of strategies in response to the new multicultural complexity encountered in both the classroom and

society as a whole (Oller, Vila, & Zufiaurre, 2012). The educational models that are compatible with the framework of inclusive education are presented as an effective means of promoting greater social integration and a peaceful coexistence in the school context (Molina & Casado, 2013). Catalan primary school promotes inclusion of students with special needs in mainstream centers and provides small groups of students with special teacher's guidance every week (Pujolar, 2010; Parrilla, 2007). Special teachers should have a specialized university training to prepare professional competencies for helping students with special needs (Cambra & Silvestre, 2003; Cardona, 2009).

3.1.3 Insights form the comparison of the two context backgrounds

There is a summary of the main features of Chinese and Catalonia educational related social culture context. The Chinese context is deeply influenced by the Confucius' Educational Thought. The Chinese teachers' roles are passing manner/attitudes, teaching knowledge, and giving explanations to students' confuses. These roles decided a teacher-centered method which is used in current teacher education and school teaching. However, the constructivism is a typical feature in current Catalan educational context. The learner-centered pedagogy plays an important role in their teacher education and school teaching.

After knowing the Chinese and Catalonian educational related culture backgrounds, it will introduce that how do the Chinese and Catalonia education system work? It mainly focuses on the primary education which includes course, students and teachers in China? Then there is a comparison on the main differences and similarities of education systems between China and Catalonia?

3.2 The Chinese and Catalan Education Systems

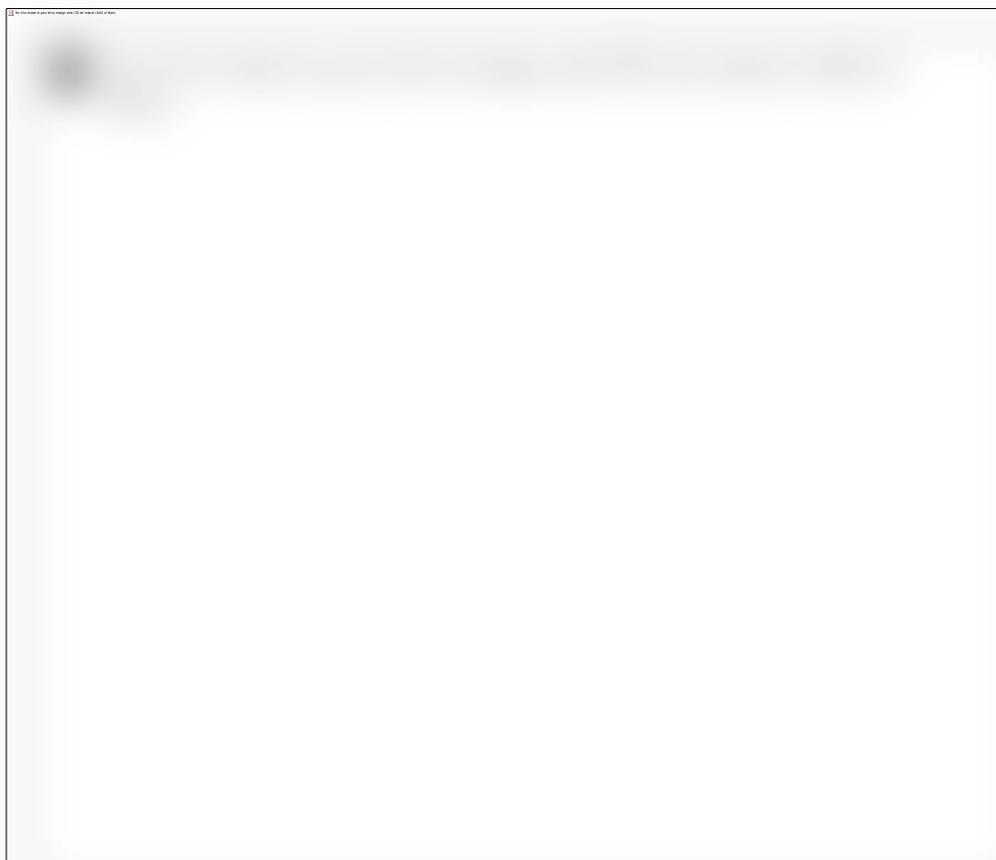
The standards of teacher's competences are different in different in education systems (Byram, & Nichols, 2001; Sue, 2001; Gone, 2015). Since we mainly focus on the primary teacher key competency, this part will mainly introduce the primary education in China and Catalonia, such as the school years and hours, the curriculums, students and teachers. Finally, there is a comparative form to clearly know the main differences of these two education system.

3.2.1 Chinese Education System

The China education system includes basic education (early childhood education, primary education, lower secondary education), senior secondary education, higher education and as well as specialized and vocational education.

In Chinese education system map, the basic education includes early childhood education, primary education and lower secondary education. The compulsory education is free which from six year and half to fifteen around. The Ministry of Education estimates the 99.7% of the population area of the country has achieved universal nine-year basic education (MEPRC, 2014a). The China's early childhood education is generally from the beginning 3 years old to 6 years old (NCEE, 2011). Kindergarten is private and accepts students under 3 years old. The Child's life in kindergarten includes three meals a day in kindergarten, play-based activities. The childhood education and kindergarten are not free; parents need pay for the tuition and food fee (Zhu & Wang2005).

The Chinese Education System Map



Reference to the National Reform Center on Education and the Economy (NCEE).

In China, it implements the nine years compulsory education (MEPRC, 2006). There are two modes, one is 6 years primary education plus 3 years low secondary education (6+3 Mode); the other one is 5 years primary education plus 4 years low secondary education (5+4 Mode). Most primary schools have a six-year course, and accepted children at six year and half. In Shanghai, it implements 5+4 mode (Shanghai Education Commission of the base, 2012). The language of instruction is Mandarin Chinese with the exception of the primary schools (MEPRC, 2000).

A typical school year is comprised of two semesters and runs from the month of September to July. Students attend classes five days a week and primary school education currently includes nine compulsory courses, which include Chinese, Mathematics, Foreign language (English), Physical Education (PE), Music and Fine Art and other Activities, practices, and Local courses (MEPRC, 2011b; Hu, Han, Wen & Li, 2005). Except these courses, the Ministry of Education required that all primary schools offer diversity activities to enrich pupils' interest in learning (MEPRC, 2011b). Furthermore, all above mentioned subjects are taught by different subject' teacher because of Chinese teachers' specialization requirements (Liu, 2003; Jiang 2004).

Table 1.
Compulsory Curriculum and Proportion and School Hours (per week)

Curriculums Year	first year	second year	third year	fourth year	fifth year	sixth year
Morality and Life	3	3				
Morality and Society			2	2	3	3
Science			3	3	3	3
Chinese	8	8	6	6	6	6
Mathematics	4	4	4	4	5	5
Foreign language			2	2	2	2
Physical education	3	3	3	3	3	3
Fine Arts and Music	4	4	4	4	2	2
Activities, practices, and Local courses	4	4	6	6	6	6
summary Total Per Week	26	26	30	30	30	30
summary Total for a year	910	910	1050	1050	1050	1056

Note. Adapted from one of school time table and translated. The numbers in each subject is calculated by class-hours. One class-hour is 45 minutes. After each class, there are 10-15 minutes breaks for students having a rest and preparing for next class.

The *Table 1* is the national “6+3” model primary curriculum plans. Primary schools should implement this program and combine with local conditions make adjustments in the curriculum and class scale ranges prescribed (MEPRC, 2011c). Local curriculum and school curriculum can be designed by local educational department and schools according to students' needs, comprehensive local human, natural and traditional strengths, curriculum resources (MEPRC, 2011c). In the specific allocation of hours of courses to reflect the principle of proportionality, other disciplines may occupy local comprehensive practical activities and lessons and the school curriculum (Wu, 2013). Furthermore, in order to cultivate students' practical ability and creative spirit, primary schools are required to organize a various disciplines of practical activities. For example, comprehensive practical activities are compulsory state regulations, including: information technology education, research study, community service and social practices, and labor and technical education. According the curriculum reform program (2011), schools are based on the nature and content of the activities to co-ordinate a reasonable arrangement. Such as, in order to improve the students' informational communication and technical competences, schools also provide at least 68 hours of IT curriculum and practice per academic year. What's more important, the research study should hold at least two hours per week. Community service and social practice, and labor and technology education at all week per year, can be concentrated, it can be dispersed arrangement (MEPRC, 2011c).

According to the new curriculum standards in 2011, the primary school time is 35 weeks per academic year (MEPRC, 2011c). School can motorize two weeks' time which depending on circumstances, such as cultural festivals, sports, hiking. Review examination time two weeks. The summer vacation and national holidays are for 13

weeks (MEPRC, 2011c). Also the school autonomy arrangements include the morning, squad meeting, science and technology and sports activities, etc (MEPRC, 2011c). Here is an example for “6+3” model curriculum for primary school.

There is the same number of teacher as the number of subjects in each class. According to education law, each class room should not hold more than 45 pupils (MEPRC, 2011d). Although there are a big number of pupils in one classroom, but the pupil-teacher ratio of regular schools is 16.76 by the national level (MEPRC, 2013). And the enrollment ratio of primary school-age children is 97% (MEPRC, 2014). As the traditional Chinese culture, families pay high attentions on children education, the national primary school drop-out rate from 2008 of 5.99 ‰, the 2011 dropout rate 8.8 ‰ according to the survey results of 21st Century Education Research Institute (MEPRC, 2012d).

In China, the Ministry of Education issued each subjects syllabus and unified textbooks for primary school in national level (MEPRC, 2011b). Each subject teacher should teach and finish the required content according the syllabus in every semester. And, the first and second grade students need take a test in the end of the academic years, but the other grades need take two tests in each semester (MEPRC, 2011b). In the final year of primary education, all students are required to pass in the compulsory subjects of Chinese and Mathematics (MEPRC, 2011b). The examinations are normally designed and administered by schools with guidance from local educational authorities.

About the special education, the "Compulsory Education Law" and the "Individuals with Disabilities Education Ordinance" clearly pointed that every special children has right to have compulsory educations (MEPRC, 1998, 2006). As the report of Chinese Education in 2012, there are a total of 1,767 special education schools, a

total of 4.13 million full-time teachers (MEPRC, 2012c). Nationwide were enrolled 6.41 million special education students, which 5.23 million students enrolled in the School for the blind, students enrolled in the school for the deaf 10.77 million, 23.88 million students studying in the mentally handicapped school (MEPRC, 2012d).

There are two channels. In urban area, the special students go to special schools, which are separated with normal students (Xia, 2003). In rural area, the special students attend the same school followed the majority students, which called “Learning in the Regular Classroom” (LRC) (Xu, 2012; Chris Forlin, 2012). So, pupils are following the regular class. However, typically classes have 45 students thus making it extremely difficult to individualize instruction for those students who need it (Chris Forlin, 2012). The more important problem is that many teachers in ordinary schools have never had training in special education (Worrell & Taber, 2009). However, in some cities like Shanghai, there are some inclusive classes which are called LRC in China (Xia, 2003). The inclusive education is a new educational philosophy and educational process in China. The important thing is how to train future teacher with inclusive education view and competencies in their school works.

3.2.2 The Catalan Education System

The Catalan education system is organized into mainstream education, which covers: Pre-school education (0-6 years), Basic primary school (6-12 years), Compulsory secondary education (ESO, 12-16 years), Batxillerat (High school education), Vocational training, University education (LEC, 2010). The compulsory education is ten years from the age of 6 up to 16, which consists of ten years of compulsory and free education for all pupils in Catalonia.

Pre-Primary education, according to the education law (LEC, 2009b) establishes the principles, objectives and general ordination of the infant education. Pre-primary education is the first stage of the education system and it is non-compulsory (LEC, 2009b). It is organized into two stages: the first one, up to the age of 3, and the second, from 3 to 6 years of age. It's free on second stage (LEC, 2009b).

Catalonia Education System Map



Resource from : Generalitat de Catalunya Departament d'Ensejament (2009)

In Catalan education system, primary education along with compulsory secondary education constitutes the basic education period (LOE, 2006; LEC, 2009b). The compulsory education is cost-free educational stage covers six academic years, organized in three two-year cycles (the first cycle is from 6 to 8 years, the second from 8 to 10 and the third from 10 to 12) (LOE, 2006; LEC, 2009b; GCDE, 2009). Primary education comprises three cycles, each consisting of two school years (LOE, 2006;

LEC, 2009b). During three cycles, students need learn subjects such as: *Catalan language and literature, Spanish language and literature, Knowledge of the natural, social and cultural, Foreign Language, Art Education, Physical education, Mathematics, Education for citizenship and human rights* (in one of the upper classes) (LOE, 2006; GCDE, 2009).

The language normally used in the educational system is Catalan. Children are also taught the Spanish, some foreign languages which is usually English (LOE, 2006; GCDE, 2009). However, in private schools, they learn French. There are three kind of primary schools can choose: public school, private school and public-sector schools (SNR, 2011). The public-sector primary schools were founded by the government or Church. But the education funding in this kind of school one part from the government, and another part come from the children's family.

In Catalan primary schools, one teacher can teach more than one subjects. The main subject teacher can not only teach language of Catalan and Spanish, but also teach Mathematics and Science (GCDE, 2009). Other subjects, such as Sport, Arts and English are taught by different separated teacher (GCDE, 2009). The number of pupils per group in primary education is established by law for the entire State (a maximum of 25 pupils per unit) (GCDE, 2009). Education authorities in the Autonomous Communities are in charge of establishing the maximum number of pupils for those units including pupils with specific needs for educational support (GCDE, 2009; SNR, 2011). The Table 2 shows that the primary school subjects and teaching hours per year.

Normally, the primary school should arrange the schedule according to the curriculum plan from Catalonia education system, especially and organize work projects, according to age and the interests of the students (GCDE, 2009). This flexible

decades dedicate hours each area, are respected global schedules and schedule established minimum for each cycle of the stage (Artigal, J. M., 1997; GCDE, 2009). Here is the reference about the Catalonia primary curriculums and school hours from Catalonian primary education.

Table 2.

Catalonia Primary Education Curriculums and School Hours (per academic year)

Curriculum	1 st cycle	2 nd cycle	3 rd cycle	Minimum	free	Maximum
Catalan language and literature	140	140	140	420		
Spanish language and literature	140	140	140	420		
Common linguistic structures	105	70	70	245		
Foreign language	70	105	140	315		
Knowledge of the natural, social and cultural	140	175	140	455	175	630
Art Education	70	105	70	245	280	525
Physical education	105	70	70	245	140	385
Education for citizenship and human rights			35	35		35
Mathematics	175	175	175	525	140	665
Religion (voluntary)	105	105	105	315		315
Recreation	175	175	175	525		525
Unrestricted					665	665
Total minimum	1225	1260	1260	3745		
Total hours						5250

Note. Resource from : Generalitat de Catalunya Departament d'Enseymament (2010).

According to primary curriculum rules (GCDE, 2009), student language and the communication competences are highlighted through courses training. From the above form, it can be known that the first four courses are designed for developing pupils' language and communication knowledge and skills. Additionally, pupils also need to acquire the basic mathematics, nature and cultural elements skills, as well as citizenship and religion knowledge (SNR, 2011).

The Catalan education system regulates strictly by teaching hours instead of textbooks. Every local education ministry, schools and teachers have the right to choose and decide what they will teach to their citizens (pupils) (Engel, L. C., & Ortloff, D. H., 2009). The school weekly timetable as proposed by the school management team must be approved by the School Council of the educational institution (LEC, 2009b). Then, it has to be ratified by the education authorities of the relevant Autonomous Community (LEC, 2009b). They may reject the school proposal if it does not include the general teaching scheduled activities. The schedule adopted by the school must specify the times and the conditions under which it is to remain open, teaching hours as well as the times of day the school's facilities and services are open to pupils after school hours (LEC, 2009b; GCDE, 2009). As a consequence, current dropout rates are significantly high in Spain, 31.9% in 2008, among the highest in Europe (14.9 % in EU27) (Maria, Sergi, 2011).

In Catalan primary school, teachers can do assessments to their students at the end of each cycle. If the students failed in the assessment, he/she can reread his/her study (LEC, 2009b). The assessment is carried out taking into account the different elements of the curriculum (objectives, basic skills, contents and assessment criteria). The assessment criteria set down in the curriculum are the main reference to assess the

degree of learning acquisition (LEC, 2009b). Assessment outcomes are expressed in the following terms: fail, pass, good, very good, and excellent (LEC, 2009b). As a result of the process of continuous assessment, when the pupil's overall progress is below programmer objectives, teachers must adopt the necessary measures so as to reinforce the learning process and adapt the curriculum as required (Algudo, 2003).

3.2.3 Insights form the comparison of the two educational systems

In order to clear see the differences from China and Catalonia education systems. Here is a comparative form of the education system between China and Catalonia. It more focused on primary education area. In *Table 3*, it compares the main aspects in Chinese and Catalan primary education system and related factors, such as, school types, school years, main subjects, teachers, teaching contents, teaching hours, classroom size, students, parents...

Table 3.

Comparing the Primary Education System in China and Catalonia

	China	Catalonia
School types	Not inclusive schools: 1. Public school Key school or no-key school (according to academic achievement); 2. Private school	1.Public school (Inclusive school); 2.Private school (Inclusive school); 3.Church School (Inclusive school);
School years	6 years' primary education	6 years primary education (3 cycles)

	First Grate, Second Grate, Third Grate,	1 st cycle (First and Second Grate)
	Fourth Grate, Fifth Grate, Sixth Grate	2 nd Cycle (Third and Fourth Grate)
		3 rd Cycle (Fifth and Sixth Grate)
Courses/ Subjects	Morality and Life, Morality and Society, (only 1 st and 2 nd grade). Science, Chinese, Mathematics, Foreign Language, PE, Fine Arts and Music, Morality, Activates, practice and local courses.	<i>Competency-based curriculums</i> Catalan Language, Spanish Language, Foreign Language, Natural and Social knowledge, Art, PE, Education for citizenship and rights, Mathematics, Religion...
Teacher	<i>Divided subjects teaching</i> A teacher is allowed to teacher one subject	<i>Cross-subjects Teaching</i> A teacher is allowed to teacher multiple-subjects
Teaching Content	Teaching Content is ruled by Central Educational Ministry. There are some designated materials or textbook on different subjects.	It is available to be chosen but not obligatory. School and teacher have freedom to choose any teaching materials.
Teaching hours	There are no certain rules. Each subject's teaching hours are flexible in different schools or provinces.	Teaching hours are unified by the Spanish Educational Ministry
Examination	Each term has school examination and some schools hold mid-term exams. There is a final examination in the last year which is organized by local education ministry.	Examination is only in the 3 rd Cycle, and a final exam is held by the National Test for graduating primary students.

Classroom Size	Basically, there are 35-45 pupils per class. Each class has fixed classroom.	20-23 pupils per class. Some class are moved which are separated in to smaller group like about 8 pupils in a course.
Students	Generally, pupils sit individually, be quiet and high-disciplined in class.	Normally, 4-6 pupils sit round as a group, can move out from sit and talk in class.
Special student	Mainly separated with normal pupils and study at special schools	Study with normal student in same schools.
Out of school study	Doing home works Learning more deep knowledge such as Mathematical Olympiad, English course in private institutes. Or learning Music, Arts or other interesting courses	Interesting courses: Swimming, Hockey, Football, Dance...
Parents	High valued their child education. Check their children homework every day and sign it. Attend some class-meetings which invited by the main teacher in a classroom.	It's depending on schools; some school asks some parent's participant in School activates, such as give a lesson on cooking.

From Table 3, we can know that the main different in primary education systems of China and Catalonia are school types, subjects, teachers numbers in each subjects and classroom size. Moreover, as the educational culture differ, Chinese and Catalonia hold different views on schools.

As the above comparing, one of the main characteristics of Chinese primary school education is the teaching divided subjects or curriculum, while for Catalonia

primary teacher education is the cross-curricular teaching. This difference can be reflected in their teacher education programs both in China and Catalonia. Moreover, in China most special students are separated with normal students, but in Catalonia, it implements inclusive education and special student can access the same school as normal pupils. These main differences make lots of difference on teacher education programs and teacher competencies. What are the teacher education situations in China and Catalonia? How they train the primary teachers and what competencies should every teacher candidates learn in both China and Catalonia?

3.3 Teachers-related policies in China and Catalonia

The importance of teacher education is that teacher preparation influences teachers' practice and students' academic achievement (Wenglinsky, 2002). Particularly, teachers who have had more specific training in pedagogical competence working with diversity students and skills of problem solving in real world are found to teach more effectively (Darling-Hammond & Bransford, 2005; TALIS, 2013b).

The teacher education policies aimed to guide the teachers to establish the correct professional ideals, master the necessary knowledge and skills (OECD, 2011c). It is necessary to help teachers developing their independent thinking and study habits (European Commission, 2006), guiding teachers deepen professional understanding (Darling-Hammond & Bransford, 2005), updating their knowledge structure (TALIS, 2013b), lifelong learning (European Commission, 2006) and the ability to meet the challenges of the formation (Darling-Hammond & Bransford, 2005; OECD, 2013a). Like the function decided by the structure. Teacher education related polices are the

guidance of the teacher training programs in universities or colleges which should be analyzed when comparing Chinese and Catalan teacher education programs.

In this section, it mainly introduces the teacher education and teacher competences through related policies in China and Catalonia. Then, there is a comparative form on teacher education both in China and Catalonia.

3.3.1 Teacher education and training in China

In China, there are some related policies about teacher education have motioned about teacher competencies. Such as, the Chinese Centre Ministry issued three fundamental policies which are *National Primary and Secondary Teacher Education Curriculum Standards*, *Professional Standards* and *Selection and Evaluation (examination)*. I will mainly introducing the primary teacher education related policies part to know the Chinese teacher education and competences situation.

3.3.1.1 The Policy of Chinese Teacher Education Curriculum Standards

The first important policy is called “*Teacher Education Curriculum Standards*” issued in 2011. It aims to implement deepen on the reform of teacher education and improve the quality of teacher training and construction of high-quality professional teachers (Teacher, 2011a). According to this policy, three aspects are emphasized. First of all, Teacher education curriculum should guide future teachers to establish a correct view of children, students concept, teacher View of Educational, acquire essential educational knowledge and ability to participate in educational practice, rich professional experience; guide future teachers individualized, care for and help each

child , primary and secondary school students to gradually establish a correct outlook on life, values, cultivate social responsibility, innovative spirit and practical ability. Teachers are reflective practitioners, to achieve professional development in the study of their own experience and improve the process of education and teaching behavior. Teacher education programs should strengthen practice awareness; focus on real issues, reflecting the educational reform and the development of new requirements for teachers. Teacher education curriculum should guide future teachers and researchers involved in basic education reform, active construction of educational knowledge, develop practical ability; to guide future teachers to find and solve practical problems, innovative teaching model, the formation of individual teaching styles and practical wisdom.

Table 4.

National Primary Teacher Education Curriculum standards

Learning Areas	Suggested Courses	Training Models and Academic Credits		
		3 years model	5 years model	4 year model
Child Learning and Development	Child Development; Pupils' Cognition and Learning;			
Primary Basic Education	Philosophy of Education; Curriculum Design and Evaluation; Effective Teaching; School Educational Development; Classroom Management; School Organization and Management; Education Policies and Regulations.	compulsory minimal 20 credit	compulsory minimal 26 credit	compulsory minimal 24 credit
Primary Curriculum and Activity Designing	Primary School Curriculum Standards and Textbook Research; Designing of Teaching in Primary School; Interdisciplinary Primary Education; Primary Comprehensive Practical Activities.			
Pupils' Mental and Ethical Education	Pupils counseling; primary moral development and moral education.			
Teachers' Professional Development	Teachers' Professional Ethics; Educational Research Methods; Teachers' Professional Development; Modern Educational Technology;			

and Ethical	Teachers Language; Writing skills.			
Educational Practice	Education probation (observation) Educational practice (Teaching practice)	18 weeks	18 weeks	18 weeks
Teacher education curriculum lowest total score (including elective courses)		28+18 weeks	35+18 weeks	32+18 weeks
<p>Explanations:</p> <p>(1) One credit is equivalent to students learning in courses conducted under the guidance of teachers 18 hours, and after passing the examination.</p> <p>(2) All these curriculums area of study is compulsory for each learner; recommendation modules are selectable for teacher education institution or a learner selection or combination; the teacher education institutions are autonomous on designing the credit in each curriculum.</p>				

Note, Adapted from the China Education Ministry. Policy: Arts Teacher 2011. 6.

From *Table 4*, we can know that there are six main learning areas on teacher educations. Under these six aspects, there are 23 suggested curriculums. Comparing with the old curriculums policy on teacher education, the new one more valued on child development perspective and preparation teacher candidates on interdisciplinary (cross-subjects) and practice (Teacher, 2011a). All of these new curriculum standards provide an important basis for national teacher education institutions to set basic requirements for teacher education curriculum. Also it will guide to develop programs teaching materials and curriculum resources to carry out teaching and evaluation, as well as of qualified teachers (Teacher, 2011a).

3.3.1.2 The Policy of Chinese Primary Teacher Professional Standards

The second important policy is the *Primary and Secondary School Teacher Professional Standards (Trial)* issued by the Ministry of Education on September 13th in 2012 (Teacher, 2012a). This policy formulated the "professional standards of primary school teachers" to promote the professional development of primary school teachers and construction of high-quality primary school teachers (Teacher, 2012a).

According to this policy, there were four aspects requirements in generally to explain the requirements for current primary teacher education. First of all, teacher ethics can be understand as that a teacher should love primary education, practice the socialist core value in her/his work with career aspirations (Teacher, 2012b). To fulfill professional ethics, teacher should respect for students personality, caring pupils with responsibility, be patience and careful to help and guide student growth (Teacher, 2012a).

The second one is student-centered. It could be interpreted as respecting for the students' rights and interests, understanding the physical and mental development stages and characteristics of students, and promotion of pupils learning lively, healthy and happy growth (Teacher, 2012a). The third one is pedagogical competences. It means that teacher should have abilities to teach pupils development their skills combining the subject knowledge and educational theory, to research on pupils learning rules and development process, to practice and do reflection for constantly improving the professional ability (Teacher, 2012a).

The final one is lifelong Learning. As an illustration, lifelong learning includes learning advanced theory of primary education, knowing and understanding the experiences and practices of primary education reform and development; optimize the knowledge structure, improve literacy with awareness and ability for lifelong learning and sustainable development (Teacher, 2012a). In particularly, there are three main demotions standards with 58 detail requirements for primary teachers in *Table 5*.

Table 5.
Primary school teacher professional standards (Trial)

Demotions	Training Areas	Basic requirements
Professional philosophy and Morality	Understanding and awareness of teacher career	<p>1. Can implement the center and state education policies, compliance with education laws and regulations.</p> <p>2. To understand the significance of primary education, the love of primary education, with career aspirations and professionalism.</p> <p>3. The primary school teachers' professional identity and uniqueness focus on their own professional development.</p> <p>4. Has good professional morality, serve as role models.</p> <p>5. With team spirit, active collaboration and exchange.</p>
	Attitudes to pupils and behaviors	<p>6. Care for pupils, pay attention to pupils' physical and mental health, and protect their safety in the first place.</p> <p>7. Respect pupil's independent personality; safeguard the legitimate rights and interests of students, equal treatment of each pupil. (No irony, sarcasm, discrimination pupils, not corporal punishment or disguised corporal punishment pupils.)</p> <p>8. Trust students and respect the individual differences; understand and meet the physical and mental development of pupils benefit needs.</p> <p>9. Actively create conditions for students have a happy school life.</p>
	Attitudes to teaching and behaviors	<p>10. Establish a student-centered education, moral education first philosophy, students will learn the knowledge, capacity and character development to develop the combination of great importance to the comprehensive development of students.</p> <p>11. The pupils respect the law and the law of physical and mental development of education; provide a suitable education for each pupil.</p> <p>12. The guide students to experience the fun of learning, curiosity and curiosity to protect pupils, students cultivate widespread interest, the ability and spirit of inquiry.</p> <p>13. The guide students learn how to learn, to develop good study habits.</p>
	Personal accomplishment and behavior	<p>14. Caring, responsibility, patience and care.</p> <p>15. Optimistic, enthusiastic, cheerful, nice.</p> <p>16. Good at self-regulating emotions, maintain peace of mind.</p> <p>17. Work hard, keep making progress.</p> <p>18. Neatly dressed appropriately, language specification healthy, polite manners.</p>
Professional knowledge	Students develop knowledge	<p>19. Learn about the laws, regulations and policies on pupil's survival, development and protection.</p> <p>20. Learn of different ages and with special needs student's characteristics and laws of physical and mental development, grasp the protection and promotion strategies and methods of physical and mental health of pupils.</p> <p>21. Pupils learn to understand the characteristics of different ages, students master knowledge Habits of good behavior. 22. Understanding young and psychological characteristics of small early stage of convergence pupils, help students master the smooth transition approach.</p> <p>23. The understanding of pupil's knowledge and methods</p>

		<p>adolescence and sexual health education.</p> <p>24. Pupils understand safety knowledge, to master the prevention and response method for a variety of violations and victimization of students possible.</p>
	Subject knowledge	<p>25. Meet the requirements of comprehensive teaching elementary school, understanding multi-disciplinary knowledge.</p> <p>26. The master branch of knowledge, the basic ideas and methods of teaching.</p> <p>27. Learn Section at the teaching and social practice, to understand the link with other disciplines.</p>
	Education Knowledge	<p>28. Grasp the basic theory of elementary education.</p> <p>29. Pupils grasp the characteristics and laws of conduct to develop.</p> <p>30. The law of master cognitive pupils of different ages.</p> <p>Section</p> <p>31. The master teaching curriculum standards and teaching knowledge.</p>
	Liberal knowledge	<p>32. with the corresponding natural sciences and humanities and social science.</p> <p>33. Learn the basic situation of Chinese education.</p> <p>34. Have the appropriate knowledge of art appreciation and performance.</p> <p>35. Have to adapt educational content, teaching methods and modern methods of IT knowledge.</p>
Professional skills	Design teaching program and activity	<p>36. Rational development of the individual and collective primary education program.</p> <p>37. The rational use of teaching resources, scientific preparation of teaching programs.</p> <p>38. The rational design of a variety of squad activities.</p>
	Organization and implementation	<p>39. Establish a good relationship between teachers and help students establish good peer relationships.</p> <p>40. The creation of appropriate teaching situation, timely adjustment of teaching pupils of the reaction.</p> <p>41. Mobilize student's enthusiasm for learning, combined with students' prior knowledge and experience to stimulate interest in learning.</p> <p>42. Pupils play subjectivity, flexible heuristic, inquiry, discussion, participatory and other teaching methods.</p> <p>43. The penetration of modern educational technology applied to teaching.</p> <p>44. The better to use verbal language, body language and written language, the use of Putonghua teaching, specification writing pen writing, chalk, calligraphy.</p> <p>45. The proper response to emergencies.</p> <p>46. Identification of pupils behavior and ideological trends, using scientific methods to prevent and effectively correct the bad behavior</p>

Incentives and Evaluation	47. The daily performance of the pupils to observe and judge, discovery and appreciation of each pupil's progress bit by bit. 48. The flexible use of multiple evaluation methods, to give students proper evaluation and guidance. 49. Actively guide the student's self-evaluation. 50. The use of evaluation results continues to improve education and teaching.
Communication and cooperation	51. The use of language in line with the characteristics of student's education teaching. 52. A good listener, amiable, and students to communicate effectively. 53. In cooperation with colleagues exchange, share experiences and resources for common development. 54. Communicate effectively with parents together to promote the development of pupils. 55. assist primary school to establish good relations of cooperation and mutual assistance with the community
Reflection and Development	56. The initiative to collect and analyze the relevant information, and constantly reflect and improve education and teaching. 57. For education and teaching of practical needs and problems, exploration and research. 58. The professional development plan to develop and continuously improve their professional quality.

Note. Adapted from the policies of *the education ministry on primary school teacher professional standards.* (2012).

From *Table 5*, we can know that teacher's professional philosophy and morality, knowledge and skills are three high valued demotions for preparation future primary teacher. From these demotions, the professional philosophy and morality are considered as the first important part of any future primary teachers. And teacher's knowledge of student's development knowledge, subject knowledge and broad knowledge of educational area are also highlighted for primary school teacher candidates. In this part, teachers' multi-subject knowledge is pointed out, which means the center ministry plan to train primary teachers able to teacher multi-subjects instant of the old model of one teacher to one subject. Last but not least important one is the professional skills which include skills of designing and organizing teaching activities, also with the skills of evaluation of students learning and reflection of teaching, as well as skills in

communication and cooperation. Normal and non-normal university teacher education institution should follow these standards to make their training program.

3.3.1.3 The Policy for Chinese Teachers Qualification Examination and Periodical Registration

In 2013, the third important policy was issued which was about teacher quality and examination by the Ministry of Education. On August 21st in 2013, the policy of *Reform for Teachers Qualification Examination and Periodical Registration System* was issued and started implement in national level and strengthen teacher education on professional practice (Teacher, 2013). This policy aimed to improve the standards of teacher selection in national level. Under this policy, teacher candidates qualified primary school teachers should have the certification of graduate from college and higher education (Teacher, 2013).

This examination constitutes by written test and interview. Teacher candidates can choose paper-pencil test and computer test in written test (Teacher, 2013). About the test content, the national examination is divided into kindergarten, elementary, middle and high school four levels, different levels of test subjects. For primary school teacher candidates the written test includes "comprehensive quality" and "education knowledge and ability" tests (Teacher, 2013). In local independent written test includes subjects as "education", "educational psychology", some area test professional ethics, education policies and regulations, disciplinary, teaching methods, teaching quality and capacity and didactic (Wu & Zheng, 2013; Wang, 2013). Written examination single subject results valid for two years, and passing all subjects candidates qualified to participate in the interview. It takes 60 days for candidates who passed the written exam

to participant in interview (Teacher, 2013). Interview uses a structured interview and scenario simulation methods which require the candidates to choose item or topic. Then candidates start preparing a lesson and giving a lecture, then defense for the completion of the interview (Teacher, 2013; Wang, 2013). It should be noticed that the teacher qualification examination reform is the highlight for teaching practical ability of the test by interview (Wang, 2013). Before the reform, it only tested knowledge of pedagogy and psychology, after reform, there are more valued in the testing quality of teaching ability by interview. And the test on capacity of practice in teaching the subject takes more than 60%, but before reform this part just takes under 40% (MEPRC, 2013).

More important part of this reform policy is the "Registration Measures" which require all teachers to regularly register every 5 years after getting the qualification of teacher (Teacher, 2013; MEPRC, 2013). In the registration measures procession, it is highlighted of teachers' ethics requirements (Teacher, 2013; Gu, 2014). The regular registration should objectively reflect the teachers' professional ethics, professional standards and performance. If any teacher has problems on ethics, he or she will be canceled the teacher qualification (Teacher, 2013).

The teacher standards policy aims to improve the quality of teacher education (Teacher, 2012). And the reform of teacher certification and examination will useful for the administrative departments and schools to find out the base, standardized management (Teacher, 2013). Also teacher examination reform can promote the implementation and the strengthening of the post in the series in the regular assessment of teachers and strict management (GU, 2014).

3.3.1.4 A General Introduction of Teachers Education and Training in China

How do the Chinese universities train the future primary teachers? Currently, the primary school teacher preparation can be done in normal universities, non-normal university and colleges and secondary teacher training schools in China (Xie, 2004; Zhu & Han, 2006; Yu, 2013). So the meantime normal universities are trying to prepare teachers specialization in teaching discipline (Zhu & Han, 2006). Some normal universities pursue the aim of becoming research-oriented universities (Zhu & Han, 2006; Yu, 2013).

As the teacher education highlighted the teachers' specialization on discipline, the pre-service teacher students are trained throughout different subject mattered faculties (Zhang, 2010; Ding, 2011). In normal universities, the teacher education is divided by specialization, such as Chinese Language and Literature, Languages and Literature of Minority Nationalities, Ideological and Political Education, History, English, Mathematics and applied Mathematics, Computer Science, Physics, Chemistry, Biology, Geography, Music, Fine Arts and Physical Education (He, 2005). In some normal university, there is a major of primary education which is for training multi-subjects teachers for primary education at collage of education (Xu, 2011). Students who want to be a teacher with the requirement scores in the national exam CEE, need chose a major from above mentioned faculties before entered in university. These faculties train their teacher candidates in different courses in specialization with the same model for training future primary and secondary teachers. Teacher candidates can choose to be a primary school teacher or secondary school teacher when she/ he graduate from their faculty at normal university. In additionally, the teacher candidates not only need to learn specialized knowledge in their faculty, but also need train some education and psychology courses in the first two years (Zhang, 2010). As an example,

in Southwest University (SWU), these courses are pedagogy, children development psychology, and teacher and teaching psychology, educational technology, special education and so all (Chen, 2006). Most education colleges have the special education major which is for training special teachers. The students need take the same courses as the normal teacher students, and also take some special course, for instance, the optional courses are based on the local needs for special primary education, including subjects that are helpful to broaden and deepen students' knowledge, to develop their interests and special skills, and vocational and technical subjects to meet the demands of local special education (Mao, 2007).

The internship is an important part for teacher education program. In most normal university, teaching practice includes visits to local and cooperative primary school, on-the-spot observation of pupils learning, teaching probation and student teaching themselves, and services for primary school. Using SWU as an example, the extracurricular activities are intended to promote teaching in science and technology as well as in arts and sports through lectures, get-togethers and social surveys (Zhang, 2010).

After the pre-service teacher graduate from university of collage, they need to take the teacher qualification certificate examination to get the certificate to be a teacher. The national teacher qualification exam is holding twice on March and November every year (Yang, 2014). It includes the paper-test for the knowledge, preparation a class for teaching skills, giving a lessons or classes to experts and interviewing. According to the requirements of the exam, each teacher candidates should learn, master and can use pedagogy in education work in practice, the principle

is the psychological knowledge of the special requirements of the teaching profession (MEPRC, 2013).

The in-service teacher training is very important for part as teacher professional development according to the 2010 Ministry national primary and secondary teacher training policy. The "Schoolteachers national training program," the Ministry of Education, the Ministry of Finance in 2010 aimed at improving the implementation of primary and secondary school teachers, especially rural teachers overall quality of important initiatives (MEPRC, 2010). The implementation of the national teacher training program was invested 550 million China Yuan by the central government, which aimed to support the innovative training mechanisms, to take full-time teachers training, focus on training and distance training of teachers combining massive way, the central and western rural compulsory education teachers targeted professional training. Besides, each province holds the local teacher training program to help schoolteachers improving their professional development.

In recent years, teacher training quality and standards have improved, but there are still some weak points, such as, the course content and teaching methods are relatively old, educational practice need some adaptability and pertinence. According to the national teacher education plan in next decades, it should greatly improve the quality of teacher training which is becoming the most urgent task of Chinese teacher education reform and development core.

3.3.2 Teacher education in Catalonia

In Catalonia, the primary school teacher must have a bachelor's degree in primary teacher education area. The primary teacher education program is unified by Spanish government in four years university training program. According to LOE (2006), there are five diplomas in primary teacher education: Teaching Physical Education, Special Education Teacher, Teaching Musical Education, and Teaching in Foreign Languages. In order to become a teacher in secondary education or vocational training, candidates must hold the required qualifications. In both cases teachers nationwide are required to have pedagogical and methodological training (Escobar, 2010).

The university training program is based on training teacher competences (Fernández, 2005; García SanPedro & Gairín Sallán, 2011). According to the new education law (LOMCE), the training of primary teacher candidates should possess basic competencies to teach pupils learning 7 key competencies in linguistic communication, mathematics, science, technology, digital, learning to learn, social and civic, sense of initiative and entrepreneurship, as well as cultural awareness and expression (LOMCE, 2013). While, in university primary teacher training programs, these competences are divided into basic competence, general competence, specific competence and transverse competence.

According to the Royal Decree (RD. 2007), student teachers is required to complete 240 credits during four years primary teacher education. The curriculum is divided into three sections: the basic training module, the Teaching and Discipline module, and the Practicum. The primary teacher education program aims at providing

the basic training required to practice as a teacher in the range of 6-12 years of primary school (RD. 2007).

In Catalonia, primary teacher education also attaches importance on inclusion and diversity competencies in training process. In 2010, the report issued by the National Education Board, it is necessary to train future teachers supporting and counseling staff, regarding appropriate attention to students with specific needs for educational support. Furthermore, they point out that it is necessary to promote in-service training and actions related to attention to diversity and reinforcement activities, to immigration, school mediation, coexistence and strategies conflict resolution. So, the education of classroom teachers in Catalonia (who teach 6–12 year olds in lower grades of primary school) should prepare inclusive education related knowledge, except this they also should training in pedagogical content knowledge for individual subjects, pedagogy, developmental psychology, the sociology of education, and general subjects such as philosophy, economy and sociology (Kovacs-Cerovic, 2006).

According to the Action Plan and the Territorial Cooperation Programmes presented by the Ministry of Education in Catalonia insisted on the need to pay special attention to the qualification and updating of competences of teachers, as regards inclusive education, students diversity and intercultural education (Escobar, 2010). Several regional educational authorities have also given priority to social cohesion, equity in education, tutorial functions and guidance departments, and to attention to students with specific needs for educational support. As for government, the ministry of education defines the framework for teachers' professional development. The standards for teacher quality are defined by the 2006 Act (LOE, 2006). In the past two years, the Inspectorate looks more closely into the quality of human resource policies and of the

teaching staff in a school as a whole. The pedagogical preparation of Catalonia future teachers appears to be better than their academic knowledge, according to a recent study on initial teacher training. Their annual teaching hours are higher than the OECD average, but average total working time is lower (OECD, 2012d). So, the new education law is training to improve the quality of basic education and teacher quality (LOMCE).

3.3.3 Insights form the comparison of the teacher education policies between China and Catalonia

In order to clear see the differences of the teacher education, there is a comparative table (*Table 6*) in the following part which provided the main differences between China and Catalonia.

From *Table 6*, we can see the main differences in primary school teacher education between China and Catalonia are that Chinese teacher education programs are trained by both universities and colleges, whereas the Catalan primary teacher education program is unified by Spanish government through 4 years university training. Moreover, in China, the educational policies and system strongly supported to the specialization and professional development for each subject teacher. While Catalan primary teacher education policy address on training cross-subjects teaching competencies for future primary school.

Table 6.

A comparative form of the teacher education between China and Catalonia

	Chinese Teacher Education	Catalonia Teacher Education

Policies	There are competence-related policies, but not very clearly pointed out which competences are important for primary school teachers.	There is a clear framework on primary school teacher competences in policy level. LOE, 2006 8 Key Competences LOMCE, 2013, 7 Key Competences
Training Models	Most university are 4 years training model, some collages are 3 years training model	Four-year training model (LOE) 3+2 model (LOMCE)
Highlighted training areas	As the requiring of teachers discipline professional development, Chinese teacher education highlighted training teacher curriculums and subject content related knowledge and pedagogical skills, Professional Ethic and attitudes.	As the competences-based teacher education program, Catalonia primary teacher education highlighted preparing the future teacher different kinds of key competences. More important, the inclusive education ideology is also pay attention in the training process.
Curriculums	Different faculties make different plan of teacher education curriculums.	The primary teacher education curriculum made by education faculty. There are mainly four kinds of teachers which will <i>teach on Physical Education, Special Education, Musical Education, and in Foreign Languages.</i>
Practices	According to law, there is 18 weeks practice training. Normally, it starts in the third year training, includes: Education probation (observation) Educational practice (Teaching practice)	Internship should takes 50 credits. Normally, each training years has different practice works.

Additionally, the Chinese primary education and training policies are more focused on curriculums and subject content related knowledge and pedagogical skills. Furthermore, teacher professional ethic and attitudes are considered as an important for teacher elements by central government. Instead of the specialized teacher training, the Catalan educational policies are aimed to train primary teachers as generalists to teach multiple subjects. Moreover, the Catalan education keeps addressing the educational inclusion and diversity which is considered an important factor in improving education quality. The Catalan primary teacher education is undertaken by the education faculty at University.

3.4 Standards of professional competencies for teachers: a competency framework for teachers

In the 1970s, there was an educational movement in the United States focused on Competency Based Education – (CBE) (Weddell, 2006). It delineated an approach to education, emphasizing on the outcomes of learning, related to the changing need of beneficiaries, in a complex structure of knowledge, skills, attitudes and behaviors that sustain learner's effective performance in relation to a task, or a problem-solving situation in the real world. (Jonese 2002; Serdenciuc, 2013; Stevens, 2013; Weddel, 2006). One of most popular theory on teacher education is the competency-based-teacher-training (CBTT) theory which has a deeply influenced on currently teacher education and training in the world.

Based CBTT, researches reached a common view that knowledge, skill and attitudes are three basic factors of teacher competences. However there is a uniform standard on what kinds of knowledge, skills or attitudes should be trained to the future primary school teachers. Different time and countries have different content. According to Darling-Hammond and her colleagues, they pointed that it's necessary for training future teachers' perspective of child psychological development knowledge. Because it will be helpful to teacher make a suitable teaching plan for pupil's development. For instant, a teacher need to be able to support children's development across many aspects, including physical, social-emotional, moral, and linguistic, as well as cognitive (Darling-Hammond & Bransford, 2005). Recently, as the ICT development, new technology related knowledge and skills should be prepared for teachers. Also, teachers as lifelong learners should learn and adept new requirement for constant improvement in their quality process (Darling-Hammond & Bransford, 2005).

Additionally, as the social and technology development (international immigration increasing, educational equality and quality requirements), it is more and more important for teachers to preparing skills of management the multicultural classrooms and integrate students with special needs, using ICT for teaching effectively, engage in evaluation and accountability processes, and involve parents in schools (Caena, 2011, OECD, 2009 & 2014b). So, teachers meet new challenges and need possess new competences to adapt to new situation and social development. Furthermore, according to the World Summit on Teaching which pointed that teachers should have abilities for helping students acquiring five aspects competences on thinking, working, using tools, citizenship and life (OECD, 2011; European commission, 2013). These competences includes the creativity, critical thinking, problem-solving, decision-making and learning; the skills of communication and collaboration; using tools of information and communications technologies; as well as skills around citizenship, personal and social responsibility for success in modern democracies (OECD, 2011). For reaching these goals, university level's teacher training programs should clearly provide a detail teacher key competences model for guide educators to know how to prepare these competences for future teachers.

In this section, based on the review of current international teacher competencies model, it will develop a suitable model of teacher key competences for comparing Chinese and Catalonian primary school teachers.

3.4.1 Conception of the competency

What is competency? A common view is that the competence is a combination of knowledge, skills, ability, and other characteristics which are called KSAOs (Catano,

2007; Koster & Dengerink, 2005; Mirabile, 1997; Spencer & Spencer, 1993). In this point of view, competency is distinguished from skill, which integrated abilities to perform complex acts with personal characterizes (Caena, 2011). Another famous definition is that competency is a combination of motives, traits, self-concepts, attitudes or values, content knowledge or cognitive behavior skills, any individual characteristic that can be reliably measured or counted and that can be shown to differentiate superior from average performers (Koster & Dengerink, 2008; Spencer, McClelland, & Spencer, 1994). According these two definitions, we can know that competency should include these basic elements: knowledge, skills, attitudes and values at least.

Similarly, teacher competency is delineated as knowledge, skills, attitudes, values of teachers, which can empower them to teach effectively and be able to promote teacher professional development along the teacher's career through a coherent way (European Commission; 2013; González & Wagenaar, 2005; Koster & Dengerink, 2008; OECD, 2005b). More important, teacher competences should entail mobilizing specific skills and carrying out tasks, whose successful execution can be evaluated (González & Wagenaar, 2005). It also should be able to guide the university teacher preparation program (Kelly & Grenfell, 2004; OECD, 2009).

What is the key competency? It contributes to valued outcomes of the organization, defining the abilities of individuals to meet strategic demands, and are important not just for specialists but for all individuals (Sturgess, 2012). In this research, the primary teacher key competencies were defined as the most important special competencies which are influenced teachers' teaching and other daily school working. Additionally, there is another very similar word- "Competence". Most researchers did not make the difference, because it related with the customary of words

using, such as researchers or policy makers in UK and EU more commonly use “competence”, but in USA and Australia they used to use “competency” (BHAT, 2011). However, there are also some researcher who had distinguish these two words, they thought the term of “competence” is given a generic or holistic meaning and refers to a person's overall capacity, while the term of “competency” refers to specific abilities (DPEP, 1996; Feiman-Nemser, 2001; Herman and Kenyon, 1987). In this research, I did not make a difference between “Competency” and “Competence”. I use “competencies” in title, only because this research focused on each specific competency in different categories.

What’s the distinguishing between teaching competences and teacher competences? According to the summary of literatures and EU policies on supporting teacher development, teaching competences are focused on the role of the teacher in the classroom, directly linked with the 'craft' of teaching-with professional knowledge and skills mobilized for action (EU; 2013; Hagger & McIntyre, 2006). Teacher competences imply a wider, systemic view of teacher professionalism, on multiple levels – the individual, the school, the local community, professional networks (OECD, 2013).

3.4.2 International taxonomies of Teacher (Key) Competencies

The standards of teacher competencies are edited and written by Educational Department in policy level (Popham, 1986). The standards outline the varying degrees of effectiveness teachers demonstrate when applying their professional knowledge, skills and attributes to their specific teaching context (European Commission, 2005; Rifon, 2010). In this part, the descriptive regulations of primary teacher competence

through summarize the important international policies in European, USA, Austrian, and a specific research project of DeSeCo.

In recent years, European Union issued a series of policies for improving teacher competences (European Union, 2007, 2008, 2009, 2011, 2013), including definition, standards and theoretical framework. According to the document “*Common European Principles for Teacher Competences and Qualifications*”, it pointed three broad areas of competencies, are very important for all EU teachers. These competences are working with others, working with knowledge, technology and information, and working in and with society (EU, 2005c). Based on these three aspects, it developed the standards of EU primary and secondary teacher key competences.

And EU priorities aimed to improve teacher competences, as well as to promote professional values and attitudes, mentioning as examples the following teacher requirements (European Union, 2007, 2008, 2009): a specialist knowledge of subjects/ pedagogical skills, comprising the following/ teach heterogeneous classes/ use ICT/ teach transversal competences/create safe attractive schools/cultures/ attitudes of reflective practice, research, innovation, collaboration, autonomous learning. In 2011, the document of Literature review Teachers’ core competences: requirements and development.

Table 7.

EU teacher competency standards of primary and secondary teachers

	Specific competences	Generic key competences
Primary school teacher	<ul style="list-style-type: none"> • work with information and knowledge of subject taught, educational issues and theoretical bases; • work with human beings, analyzing complex situations about learning and development in context; • work with society on different levels, including the development of professional values and the ability to reflect on practices and contexts • ability to reflect on one's own and others' value systems, development and practices 	<ul style="list-style-type: none"> • capacity to learn • autonomy • decision-making • appreciation of diversity and multiculturalists • ethical commitment • critical and self-critical abilities • capacity to improve one's own learning and performance, including study and research skills • ability to analyze, synthesize, evaluate, identify problems and work out solutions • firm knowledge of the profession in practice
Secondary school teacher	<ul style="list-style-type: none"> • development of knowledge and understanding in chosen area of professional specialization • ability to use research appropriate to discipline to inform practices • ability to reflect on values appropriate to educational activities 	<ul style="list-style-type: none"> • research skills • leadership skills • ability to reflect on and evaluate one's own performance • development of advanced cognitive skills associated with knowledge development and • Creation.

Source from *European Commission (2009, 2012)*.

Another important policy is about the Life Long Learning (LLL) program which underlines the importance of transversal competences within the eight key ones required in a changing world - in particular, the meta-competence of learning to learn (Commission of the European Communities, 2009; European Commission, 2004). The eight key competences for LLL are defined as follows:

- Communication in mother tongue
- Communication in a foreign language
- Mathematical, scientific, technological literacy
- Digital competence

- Learning to learn
- Interpersonal, civic competences
- Entrepreneurship
- Cultural expression

Following the eight key competences for LLL, Spanish made their 8 key competencies for primary teacher, which are linguistic communication competencies, mathematical and basic competencies in science and technology, digital competencies, learning to learn competencies, social and civic competences, sense of initiative and entrepreneurship competencies and cultural awareness and expression competencies (LEO, 2006).

In the USA, there are basic standards about teacher assessment competencies developed by the American Federation of Teachers National Council on Measurement in Education National Education Association.

Table 9.

Standards for Teacher Competence in Educational Assessment of Students

Teacher Assessment Competencies Standards

1. Teachers should be skilled in choosing assessment methods appropriate for instructional decisions.
 2. Teachers should be skilled in developing assessment methods appropriate for instructional decisions.
 3. The teacher should be skilled in administering, scoring and interpreting the results of both externally-produced and teacher-produced assessment methods.
 4. Teachers should be skilled in using assessment results when making decisions about individual
-

students, planning teaching, developing curriculum, and school improvement.

5. Teachers should be skilled in developing valid pupil grading procedures which use pupil assessments.
6. Teachers should be skilled in communicating assessment results to students, parents, other lay audiences, and other educators
7. Teachers should be skilled in recognizing unethical, illegal, and otherwise inappropriate assessment methods and uses of assessment information.

Source from the research of Williamson, Mc Diarmid & Clevenger-Bright M (2008).

According to the USA standards of teacher assessment competencies, it can clearly know that the assessment is an important part in both teaching and student learning process. Such as the choosing assessment methods, administering, scoring and interpreting the results, using assessment results when making decisions planning teaching, developing curriculum, and school improvement communicating assessment results to students, parents, other lay audiences, and other educators... These standards provide a good reference for development our theoretical framework of teacher competencies.

The Australian National Education and Training Board, Competency Framework for Teachers (2004), cleared that the critical elements of competency are the basic building blocks of each competency standards.

From *Table 8*, we can know that a range of professional actions teachers engage in as they apply their professional knowledge, skills and attributes to their teaching context. They are identifiable characteristics that contribute to the achievement of the overall competence standards.

Table 8.

Australian Teacher Competency Standards

Teacher Competence Standards for Phase	
Teacher Competence Standards for Phase 1	<ol style="list-style-type: none"> 1. Engage student in purposeful and appropriate learning experiences. 2. Monitor, assess record and report student learning outcomes. 3. Reflect critically upon professional experiences in order to enhance professional effectiveness. 4. Participate in curriculum policy and program teamwork. 5. Establish partnerships with students, colleagues, parents, and other caregivers and agencies.
Teacher Competence Standards for Phase 2	<ol style="list-style-type: none"> 1. Cater for diverse student learning styles and needs through consistent application of a wide range of teaching strategies. 2. Apply comprehensive systems of assessment and reporting in relation to student attainment of learning outcomes. 3. Contribute to the development of a learning community. 4. Provide support for curriculum policy or program teams. 5. Support students learning through partnerships and teamwork with members of the school community.
Teacher Competence Standards for Phase 3	<ol style="list-style-type: none"> 1. Use exemplary teaching strategies and techniques that meet the needs of individual students, groups and/or classes of students in a highly responsive and inclusive manner. 2. Consistently use exemplary assessment and reporting strategies that are highly responsive and inclusive 3. Engage in a variety of professional learning activities that promote the development of a learning community 4. Provide leadership in the school by assuming a key role in school development processes including curriculum planning and policy formulation. 5. Facilitate teamwork within the school community.

Source from the Australian National Education and Training Board- Competency Framework for Teachers.

Last but not least, the OECD program for selecting the core (key) competences in education related area, which called DeSeCo. It also provided a reference for key teacher competences in *Table 10*.

Table 10.

DeSeCo three broad interconnected teacher competences

Three broads	Competencies
Use tools interactively	Use language symbols and text interactively (communication, literacy, numeracy). Use knowledge and information interactively (scientific literacy). Use technology interactively.
Interact in heterogeneous groups	Relate well to others (empathy, emotional management). Cooperate (present and listen to ideas; debate dynamics; build alliances; negotiate; consider different opinions in decisions). Management, resolve conflicts.
Act autonomously	Act within the big picture (understands system patterns, rules, expectations; identify consequences of actions for action choices). Form and conduct life plans and personal projects. Assert rights, interests, limits, needs.

Source from European Commission (2009).

The DeSeCo teacher competence standards are different with others, which mainly divided teacher competences in three broads' standards: *Use Tool interactively*, *Interact in heterogeneous groups*, and *Act autonomously*.

From above review of the different categories of teacher key competencies, it can know there is not a universal frame of cross-cultures and countries. Which competencies are most important for current primary teachers? Whether there are some key competencies can be considered as key competencies cross-cultures? Since values underpinning standard statements have often been found to overlook or simplify the complexity in teaching and learning (Eraut, 1994; Korthagen, 2004; Zeichner, 2005), the teacher's competencies have been defined by different criteria as the reconceptualization for different countries (Cochran-Smith, 2006).

3.4.3 A summary of key Teacher Competences

The teacher competences in different countries are wide variations in standards implementation and use, according to the contexts and the responsibilities for judgments (Conway et al., 2011, Koster & Dengerink, 2008; Mahony & Hextall, 2000).

In research level, there are some different findings in the following two main views. Some researches pointed out that the key competencies should include these 6 categories: knowledge of curriculum and content; knowing the student; skills of learning and teaching process; ability of monitoring and evaluation; society relationship; and professional values. (Passos, 2009; Xu & Zhang, 2006; Cheng and Tsui, 1998). Other researches believed that more specific competencies should be included, such as organize and direct learning situations, managing the progression of learning, develop and make differentiation evolve devices, involve students in their learning and in their work, teamwork, participate in the administration of the school, inform and involve the pairs, use new technologies, addressing the duties and the ethical dilemmas of the profession, and manage own training (Alice, 2009; Fernández, 2011; Jane M. Watson, 2001; Perrenoud, 2006).

Additionally, this research has summarized the current teacher key competencies related international literatures and selected of these 90 key teacher competencies items on the lists which used to develop our synthesized model of teacher key competencies.

Table 12.

List of teacher competencies by items

Teacher key competencies lists	References
Pedagogical Content Knowledge (PCK)	Darling-Hammond & Bransford, 2005
Children developmental psychology Learners´ knowledge	Darling-Hammond & Bransford, 2005; Diarmid & Clevenger-Bright, 2008
Subject matter knowledge	Darling-Hammond & Bransford, 2005
Curricular knowledge	Mc Diarmid & Clevenger-Bright, 2008
Knowledge of inclusion and diversity	OECD, 2012
Contextual, institutional, organizational aspects of educational policies	Mc Diarmid & Clevenger-Bright, 2008
Educational sciences foundations	Mc Diarmid & Clevenger-Bright, 2008
Knowledge of evaluation and assessment processes and methods	Mc Diarmid & Clevenger-Bright, 2008
The knowledge of new technologies for teaching the specific subject	Mishra & Koehler, 2006
Cultural knowledge related to the subject	Feiman-Nemser, 2001; Gairín, 2003
Psycho-pedagogical knowledge in relation to Learning Theories, Curriculum and Institutional Organization.	Feiman-Nemser, 2001; Gairín, 2003,
Teaching practice’s knowledge, related to teaching experience, professional socialization, communicative skills, and methodology.	Darling-Hammond & Bransford, 2005

Planning and designing a class,	Feiman-Nemser, 2001; Koksal, 2013
Planning the Teaching-Learning Process	Zabalza.M, 2003; Zhang, 2009
Selecting and preparing the subject content	Zabalza, 2003; Han, 2006
Offering information and understandable and well organized explanations (communicative competence)	Zabalza, 2003; Zhang, 2013
Designing the methodology and to organize activities	Zabalza, 2003
Skills of evaluation and assessment processes and methods	Darling-Hammond & Bransford, 2005 González & Wagenaar, 2005
Reflecting the research on and teaching process	Walsh & Mann, 2015; Zabalza, 2003
Engaging with the institution and team working	Zabalza, 2003
Social-Cultural Competencies ·	Selvi, 2010
Managing and coordinating teaching	Feiman-Nemser, 2001
Using teaching materials and technologies	Feiman-Nemser, 2001; Geijsel et al. 2009; Zabalza.M. A, 2003.
Effectively use of technologies in learning	Feiman-Nemser, 2001
Group processes and dynamics, learning theories, motivational issues.	Feiman-Nemser, 2008
Information and Communication Technologies (ICT) Competencies	OECD, 2009, 2012; Selvi, 2010
Collaborating with colleagues, parents and social services	González & Wagenaar, 2005

Effective classroom management skills	Darling-Hammond & Bransford, 2005; Escobar & Walsh 2016
Designer of effective learning opportunities	Darling-Hammond & Bransford, 2005
Having effective communication skills;	Stronge et al., 2011
Using the maximum potential of learning opportunities;	Stronge et al., 2011
Thinking in alternatives	Stronge et al., 2011
Acting in a proactive way	Stronge et al., 2011
Building a learning community	Stronge et al., 2011
Shifting emphasis from knowing to doing inside or outside the classroom	Stronge et al., 2011; Volk, 2009 Zeichner, 2010
Having a skill-oriented approach to learning;	Stronge et al., 2011
Fair and respectful in relationship with students	Stronge et al., 2011
Helping students to transfer outcomes of learning outside the classroom	Koksal, 2013; Zhang, 2013
Considering assessment as an integrated part of the learning process	Vazirani, 2010
Commitment to promoting the learning of all students	Hatano & Oura, 2003
Dispositions to promote students' democratic attitudes and practices	Kelly & Grenfell, 2004; Krauss et al., 2008; Mishra & Koehler, 2006
Attitudes, mirroring and promoting collaboration, cooperation, networking and lifelong learning, as linked to transversal skills	Kelly & Grenfell, 2004; Xu, 2007

Being able to perform action research	Volk, 2009
Stimulating active forms of learning	Houghton, 2001
Having an extended cultural competency	Ball & Forzani, 2009
Using the technology in alternative ways	Ball & Forzani, 2009
Emotional Competencies	Selvi, K., 2010
Emotional regulation	Michael & Fiona, 2004
Emotional express and manage skills	Michael & Fiona, 2004,
To have a good relationship and communication with students	Zabalza.M. A, 2003
Ability to reflect on one's own and others' value systems, development and practices	Brussels, 2013; González & Wagenaar, 2005
Capacity to learn	Eueopean Commission, 2009; 2013
Decision-making	González & Wagenaar, 2005
Autonomy	TAILS, 2013
Appreciation of diversity and multiculturalism	González & Wagenaar, 2005
Ethical commitment	González & Wagenaar, 2005
Critical and self-critical abilities	González & Wagenaar, 2005
Capacity to improve one's own learning and performance, including study and research skills	González & Wagenaar, 2005
Ability to analyze, synthesize, evaluate, identify problems and work out solutions	González & Wagenaar, 2005

Culture and multicultural knowledge	Zeichner, 2005
Ability to use research appropriate to discipline to inform practices	Eueopean Commission, 2009
Ability to reflect on values appropriate to educational activities	Eueopean Commission, 2013
Research skills	Eueopean Commission, 2010
Leadership skills	Lu, 2013
Dispositions to change, flexibility, ongoing learning and professional improvement, including study and research	Eueopean Commission, 2009; 2010
Dispositions to promote students' democratic attitudes and practices, as citizens (including appreciation of diversity and multiculturalism)	Eueopean Commission, 2009
Development of advanced cognitive skills associated with knowledge development and Creation	Eueopean Commission, 2009
Emerging and contemporary knowledge and the practical understanding that a teacher needs in order to Perform his or her duties.	Alnoor & Ma, 2011; Darling-Hammond & Bransford, 2005
Strategies and classroom management techniques that a teacher uses to enhance learning	Zeichner, 2005; Alnoor & Ma, 2011
Assessment and Evaluation refers to the process of collecting, analyzing	Alnoor & Ma, 2011; Darling-Hammond & Bransford, 2005
Professional Values refers to the teachers' mode of conduct, ethics, high standards of commitment towards their professional role and promotion of good citizenship	Alnoor & Ma, 2011

Personality and motivation	Xu & Zhang, 2006; Han, 2006
Self-improvement motivation	Xu & Zhang , 2006, Zhang, 2009
Respect and understanding students and their colleagues,	Xu & Zhang , 2006, Han, 2006
A strong sense of responsibility	Xu & Zhang , 2006; Zhang, 2009
The enthusiasm to teach	Jin, Li, Ding & Li, 2013
Be patient to students	Zhang, 2009
Creative Thinking	Xu & Zhang , 2006
To be a model for students	Xu & Zhang , 2006
Awareness and understanding of the different ways in which students learn	Alece, 2009; Loughran & Berry 2005
Knowledge, skills and attitudes relating to assessment and evaluation of students, in order to help students learn	FIELDEN, 1998 Eueopean Commission, 2009
Commitment to scholarship in the discipline, maintaining professional standards and knowledge of current developments	Eueopean Commission, 2009 Brussels, 2007
Awareness of IT applications to the discipline	Barnett, Brunne, Maier & Warren, 2013
Sensitivity to external "market" signals as regards the needs of those likely to employ graduates of the discipline;	Eueopean Commission, 2009; 2013
Mastery of new developments in teaching and learning	Fielden, 1998
Customer awareness, as regards the views and aspirations of stakeholders, including students	OECD 2007b, 2009

Understanding of the impact that international and multi-cultural factors would have on the curricula;	McAllister & Jacqueline, 2000; OECD 2007a, c, 2009
Ability to teach a diverse range of students, from different age groups, socio-economic backgrounds, races etc	Jason, Schmutz, Missihoun, Pass & Katsanos, 2015; OECD, 2013
Skills in handling larger numbers of students in formal lectures, seminars or workshops than hitherto, without the loss of quality;	Brown, Bull, & Pendlebury, 2013.
Development of personal and professional "coping strategies".	Pillen, Beijaard, & Brok, 2013

All these competencies in the lists are used to build our synthesized framework of teacher key competencies which are based on the analysis of Chinese and Catalan educational contexts. Then, I categorized these 90 items into eight big groups. Moreover, each group of key competencies was reference the framework of EU teacher key competencies, Chinese teacher professional standards, and other countries experiences. The items were developed according to the literature review of main teacher key competencies researches. In the following section, it will mainly introduce the integrated key competence framework and model which will be applied for data analysis in two studies.

3.4.4 Synthesis of The theoretical framework: a proposal of 8 Key teaching competences

Based on the review of teacher competencies in policy level and international research level, it selected nine group key competences for primary teachers in this research theoretical framework. These eight groups of key teacher competencies are

curriculum knowledge competences, pedagogical competences, assessment competences, classroom management competences, emotional competences, social communication competences, culture and cross-culture competences, learning to learn competences and professional attitudes, values and ethic competences. It can see the content and details from *Table 13*.

Table 13.
The theoretical Framework of the Primary Teacher Competences Form

Competencies	Contents
Curriculum Knowledge Competences	Subject matter knowledge
	Curricular knowledge (knowledge of subject curricula – e.g. the planned and guided learning of subject-specific contents)
Pedagogic Competences	Pedagogical knowledge (knowledge of teaching and learning processes)
	Pedagogical Content Knowledge (PCK) - knowledge of tasks, learning contexts and objectives; - knowledge of students' prior knowledge and recurrent, subject-specific learning difficulties; - strategic knowledge of instructional methods and curricular materials
	Knowledge of Educational sciences foundations
	Knowledge of Children developmental psychology
	Planning and designing a class,
	Organizing the instructional processes,
	Using accurately new technologies in teaching,
	Having creativity and critical thinking ability
	Organizing and managing students in groups to learn
	Having abilities of researching on teaching content
	Teaching skills through content Transferable skills
	Skills of group processes and dynamics, learning theories, motivational issues
Assessment Competences	Choosing appropriate methods for assessment student
	Evaluation and assessment processes and methods
	Assessing student learning outcomes accurately
	Using assessment results to make decisions about individual students

	Giving feedback assessment results to students and parents
	Being reflexive on whole process and writing notes for improving teaching results
Classroom Management Competence	Being capable of effective management teaching space teaching aids and other teaching resources
	Creating an equal and fair climate in classroom
	Guiding and regulating pupils' correct behaviors
	Encouraging students learning share
	Encouraging pupils' self-discipline
	Organizing diversity of student's activities.
	Commitment to promoting the learning of all students
Emotional, Social and Communication Competencies	Recognizing own and others emotion
	Having skills to express own emotion
	Transferring positive emotions to students
	Coping with personal emotional problems
	Understanding others' emotions,
	Being patient to students
	Having Enthusiasm on teaching
	Having skills of collaborating with colleagues, parents and other various sectors of the educational community.
	Being respectful with parents and colleagues views,
	Acting respectfully with every student
	Having a sense of social services
	Having good relationship with student
	Having skills of communication with different students, parents and colleagues.
	Negotiation skills (social and political interactions with multiple educational stakeholders, actors and contexts)
Reflective, met-cognitive, interpersonal skills for learning individually and in professional communities	
Culture and	Knowing their own culture
	Having self-aware on culture

Cross-Culture Competencies	Knowing and Understanding different cultural background of students
	Adapting and valuing to diversity
	Respecting cultural differences, and different traditions and values
	Having an ability of inclusion and diversity all students in school
	Dispositions to promote students' democratic attitudes and practices, as European citizens (including appreciation of diversity and multiculturalism)
Learning to learn competencies	Being a Life-long learner
	Learning from their students and colleagues
	Having independent study habits and methods.
	Being opened mind
	Having motivation on improving and self-improvement
	Commitment to promoting the learning of all students
Professional Values, Attitudes and Ethical Competencies	Having a clear ethical commitment
	Having a strong sense of responsibility
	Having sense of laws and regulations
	Having positive attitudes on working
	Having autonomy and initiative in education work
	Having an ability to transfer those values on pupils educational activities (such as Trust, Honesty, Commitment, Respect, Fairness Equality, and Integrity, Tolerance Service).

The categorization framework of teacher key competencies based on the scientific literature review, which included eight big categories: Knowledge, Pedagogical, Assessment, Classroom Management, Communicative, social and emotional, Culture and Cross-culture, Learning to Learn, and Professional Values, Attitude, and Ethical. Under each big category, there are some subcategories of teacher

key competencies which were referenced the current international literatures and selected according to the situation in both Chinese teachers and Catalonia teachers.

Study I

Teacher key competencies: a comparative study between Chinese and Catalan primary teacher's perspectives

Abstract

Since, teacher competency plays an important role in students learning achievement and their professional development; policymakers put on the international agenda the teacher competency for making policies to improve the teacher education, training and selection. Nevertheless, there is not a consensus on the most important teacher competences. Probably the value given to the different competencies is linked to the education traditions and cultures. China and Catalonia are examples of different Education traditions. This study is aimed at comparing the most valued key competencies and professional goals of a sample of 276 primary school teachers from Catalonia and China. An open-ended questionnaire was used to collected data in both locations. The results showed that the main difference is that Chinese teachers believe knowledge competency as the most valued competency among the eight key competencies while for Catalan teachers learning to learn competency is the most valued one. Additionally, the main professional goals for Chinese teachers are linked to their own professional development, while for Catalonia teachers the goals are more focused on their students' development. Thus, this research provides a new perspective to get a better understanding of the role that key competencies played for Chinese and Catalan primary teachers, which will benefit future collaborations from a cross-cultural teacher preparation and training.

Key words: Teacher competencies, Teacher professional development, Chinese primary school teacher, Catalonian primary school teachers,

4.1 Introduction

Some researchers have found that competent teachers have long-lasting positive impact on student learning and professional development (Brussels, 2007; Caena, 2011; Cots & Nussbaum, 2008; Harris & Sass, 2011; Wright, Horn & Sanders, 1997). Since, teacher competency plays an important role in students learning achievement and their professional development; policymakers put the teacher competency as the essential reference on making policies of improving the teacher education, training and selection (Caena, 2014; Halász & Michel, 2011; TALIS, 2010; Zeichner & Conklin, 2008).

Teacher competency has been defined as knowledge, skills, values and attitudes that contribute to a teacher's appropriate professional conduct in a given situation (Caena, 2011; Mc Clelland, 1998; DeSeCo, 2012; European Commission, 2013). It is a value-added concept and cultural and social factors and education policies influence the selection of key competencies in different countries (Brown, 2011; Caena, 2014; European Commission, 2013). As long-lasting influence by Confucius Educational Thought, Chinese teachers play important roles in both, passing knowledge and skills to students, as well as guiding student's ethic development through teachers' professional, ethic and personal influences (Wang, 2007). The Chinese elementary teacher quality standards pointed 60 detailed requirements in three key competencies areas: professional attitudes and ethic, professional knowledge, and professional skills (MEPRC, 2012). The Spanish educative system has been influenced in the last centuries by different pedagogical movements and theories, like constructivism, new school movement, inclusive schools, etc. So from the Normalization, integration and inclusion principles, Spanish regulations establish that universities must train future teachers to possess 12 key competencies, such as, knowledge competency, pedagogical

competencies of teaching in multicultural and multilingual contexts, and attitudes of gender equality, and the values of citizenship education (BOE, 2007; García, 2007). In other words, different policies guide and cultural traditions lead to different standards of teacher competency.

According to the European document of Supporting Teacher Competence Development, European teachers should update their key competencies to meet the challenges of increasingly multicultural classrooms, integrating students with special needs, using information and communication technologies (ICT) for teaching effectively, being able to evaluate teaching and learning processes, as well as involving students' parents in schools (European Commission, 2013).

Several international studies showed pointed out that more broaden teacher competency content should be provided for pre-service and in-service teachers, such as the pedagogical content knowledge and instruction strategies aiming to promote students deep learning (Ceana, 2011; Darling-Hammond & Bransford, 2005, 2006), the classroom management competency in creating a caring and supportive learning environment for diversity students (Fan, 2010; TALIS, 2013), the culture and cross-cultural competence (Lei, Li & Gong, 2016; McAllister & Irvine 2000, Oller, Vila & Zufiaurre, 2012; Portera, 2010), and social and emotional competencies (Usharani & Abdul, 2011; Ding et al, 2015). Moreover, teachers are expected to become lifelong learners and being actively engage in learning new knowledge, using ICT in their classroom and helping their students acquire competencies in a digital world (Ala-Mutka, Punie, & Redecker, 2008, Caena, 2014; Halász & Michel, 2011; Peña-López, 2010). It seems that teacher key competencies thus conceived is not only including the

traditional knowledge and skills, but also incorporating these new elements as for suitable social requirement and teachers' professional development.

Some studies found that key competency (professional knowledge and pedagogical skills) are developed significantly in the pre-service teachers' training due to the increase of their university training (Darling-Hammond & Bransford, 2005; Ding et al., 2015). Moreover, the positive schools environment is also supporting teachers to improve their teaching competencies. For instance, organizing groups of teachers to discuss and make lesson plans, observing the schools demonstration lessons for imparting best practice to other teachers or as a means of feedback and critique to the teacher giving the lesson, and serving in a mentorship capacity for a new or struggling teacher (Consortium for Policy Research in Education, 2007; Tang & Shao, 2014; Zhu & Xue, 2006). In the same vein, TALIS (2013) research found that the school leaders' support play a positive effect on teaching skills and on professional identity development of teachers (TALIS, 2013). Additionally, even though it is known that smaller classes led to higher academic learning progress better knowledge of students, and better classroom processes (Ehrenberg, Brewer, Gamoran & Willms, 2001; Brühwiler & Blatchford, 2011), it has been found that class size and teacher quality were independently important to student achievement (Brühwiler and Blatchford, 2011). In China most public school hold a relative large class size 35-45 pupils. Hence, the classroom management skills are very important for Chinese teachers (Wang & Zhou, 2001; Fan, 2010).

Current Chinese studies on teacher competency mainly focus on two areas. One is grounded in psychology and emphasizes on teachers' personal competencies inventory, such as enthusiasm for teaching, responsibility, patience and pursuit of their

professional goals (Liao, 2000; Wang, 2008; Xu & Zhang, 2006; Zhang, 2013). The other one is more focused on assessing technical teacher competencies related to didactic skills, classroom management and responsibility of students (Wu, 2011; Tong, 2008; Xu & Zhang, 2006). Moreover, teachers that scored high in the technical competence had qualifications and were able to increase the student's achievement (Xu, 2004).

In the Spanish and Catalan context, researchers found different results about the most valued key competencies from in-service and pre-service teachers. Ezquerro, De-Juanas and Ulloa's (2014) found that Spanish primary and secondary teachers considered the capability to promote students' motivation, effort and responsibilities as the most important competences for teachers. De-Juanas (2009) researched on comparing experienced and trainee Spanish primary teachers and suggested that initial teacher training should address the competencies related to the organization and management of teaching-learning and using ICT, social skills and skills for working in professional groups.

Other studies indicated the importance of training future science teachers the competency of caring the social environment (Vega-Marcot, Varela-Losada & Álvarez-Suárez, 2015), language and communicative competency (Cots & Nussbaum, 2008; Sercu & Bandura 2005), digital competency (Ala-Mutka, Punie & Redecker, 2008), as well as learning to learn competency and social skills to be citizens (Bulut, 2014; Leone, 2014; Moreno-Murcia, Torregrosa & Pedreño, 2015). Although research on teacher competencies hold different priorities, they agree that teacher competencies play important role in guiding student learning and teacher professional development

(Ezquerro, De-Juanas and Ulloa, 2014; Harris & Sass, 2011; TALIS, 2013; Zhao et al. 2013).

All in all, there is little known in the literature on how the different key teacher competencies are perceived by teachers from a cross-cultural perspective. Moreover, there are no studies comparing the differences on the importance of key teacher competencies between Chinese and Catalan (Spain) teachers. This study aims to explore the difference between two group teachers from China and Catalonia in the following three specific issues: which key competencies are considered as the most important for Chinese and Catalan primary school teachers; where did they learn these key competencies; and how these differences are related with their professional goals. It will help us better understand the Chinese and Catalan primary teachers' key competencies and professional goals through a cross-cultural comparison.

4.2 Method

An exploratory study was design for collecting data and comparing the Chinese and Catalan teacher's perceptions about what are the key competencies and where they have learnt them, as well as their main professional goals. A survey methodology was used to collect information from participants.

4.2.1 Participants

It was used an opportunity sampling method to select the participants. The sample consisted in 243 Chinese teachers from 6 primary schools with an average of 14.66 years of teaching experience, and 42 Catalanian teachers from 6 primary schools, with average of 17 years of teaching experience. The main characteristics of the sample are presented in *Table 14*.

Table 14.

Main characteristics of the Chinese and Catalanian Sample

Group	Primary School	Classroom size	Teachers		
			Participants	Percentage	Years of Teaching Mean (SD)
Chinese group	6	40-50 pupils	Male 37	14.89%	14.66 (8.35)
			Female 206	85.11%	
			Total 243	100%	
Catalonian group	6	22-25 pupils	Male 9	21.42%	17.00 (19.09)
			Female 33	78.57%	
			Total 42	100%	

To collect the information we agreed with school leaders a date of questionnaire administration. All the teachers who were at the school on the agreed day were requested to answer the questionnaire. 285 teachers answered the questionnaire but 9 of them did it incompletely so their data was not included in the analysis.

4.2.2 Instruments

An open-ended questionnaire was used to collect data from teachers in both locations (China and Catalonia). The questionnaire was designed to collect basic information (regarding variables of gender, age, years of teaching, school location, working hours and teaching hours), and information related to their professional goals and their teacher competence perception with 4 questions: *1. What are the main goals in your profession career? 2. Which teacher competencies do you think are most important for your work? (Please list the main 5 teacher key competencies by the degree of its importance and explain why). 3. In above you mentioned key competencies, which ones (one) are (is) you learned in university training process? 4. In above your mentioned key competencies, which ones (one) are (is) you learned in your working process?* The original questionnaire was developed in English. Then it was translated into Chinese

and Spanish, to make it accessible to participants from each location. To validate the content of the questionnaire, it was reviewed by 3 Chinese and 3 Spanish experts, and a pilot study with 32 cases (30 in China and 2 in Catalonia) was done.

4.2.3 Data Analysis

Both qualitative and quantitative analyses have been used in this study. First of all, a content analysis has been used to categorize the teacher's answers. For that process a mixed deductive-inductive approach was used. The selection of teacher key competencies categories were based on previous research review of the academic literature whereas the subcategories emerged directly from data.

The categorization framework of teacher key competencies based on the scientific literature review and included eight big categories: Knowledge, Pedagogical, Assessment, Classroom Management, Communicative, social and emotional, Culture and Cross-culture, Learning to Learn, and Professional Values, Attitude, and Ethical. *Table 15* shows the categories and subcategories of teacher key competencies which were used in the analysis of the Question 2, 3 and 4 in teacher questionnaire.

Table 15.

Definition of the categories and subcategories of Teacher Key Competencies

Categories	Sub-categories	Explanation
Curriculum Knowledge Competency	Subjects Knowledge	Knowledge of subjects and inter-subjects
	Curriculum knowledge	Knowledge of Curriculum
Pedagogical Competency	Pedagogical_ Planning and Designing	Planning and designing a class with the pedagogical knowledge of Children development psychology, and researching skills on the teaching content

	Pedagogical_ didactics Skills (organizing and using ICT)	Didactics skills, such as organizing the instructional process with strategies, language ability (explaining content clearly), Using ICT skills and encourage students learning (learning motivation)
	Pedagogical_ Inclusive-Diversity and Critical Thinking in Teaching	Competency of critical thinking, problem solving skills, inclusive pedagogic skill and respect diversity in teaching
	Pedagogical_ - Transferring Knowledge and Values to Real Life	Competency of guiding students on how to learn (learning methods), transferring knowledge and positive values into real life and be creative in teaching
Assessment Competency	Assessment Students Learning	Using diverse methods to assess and understand student learning process and provide feedback
	Assessment Teaching	Doing reflections on own teaching process for improving own teaching
Classroom Management Competency		Creating a caring and supportive learning environment and encouraging students and develop time management skills, guide student good behaviors
Emotional, Communicative and Social Competency	Emotional Competency	Recognizing and regulating one's and other's emotion; understanding students' learning related emotional problems and express positive emotion to students
	Communication Competency	Effective communicative skills with different students, parents and colleagues
	Social Competency	Showing interpersonal skills and a collaborative ability with other stakeholders, and showing predisposition to social service and civic awareness
Cultural and Cross-cultural Competency		Having one's own culture awareness, understanding and respecting other culture and competently teaching students from diverse cultural backgrounds.
Learning to Learn Competency		Open minded and learning from colleagues and students; have strategies to updated own knowledge and learn new skills for teaching more effectively, and to be a longing learner.
Attitudes, Ethics, and Values Competency	Attitudes	Positive attitudes towards barriers, responsibility for pupils, be autonomous in working
	Ethics	Strong professional identity and ethics
	Values	Holding and using positive values to influence students

The original data was coded, and analyzed according to the above described categories key competencies. The frequency has been used in the different questions by participants and has been analyzed quantitatively. And then, the descriptive analysis, Chi-square test, T- test and correlation were used to compare if there were significant differences between Catalan and Chinese primary school by SPSS 20.0.

4.3 Results

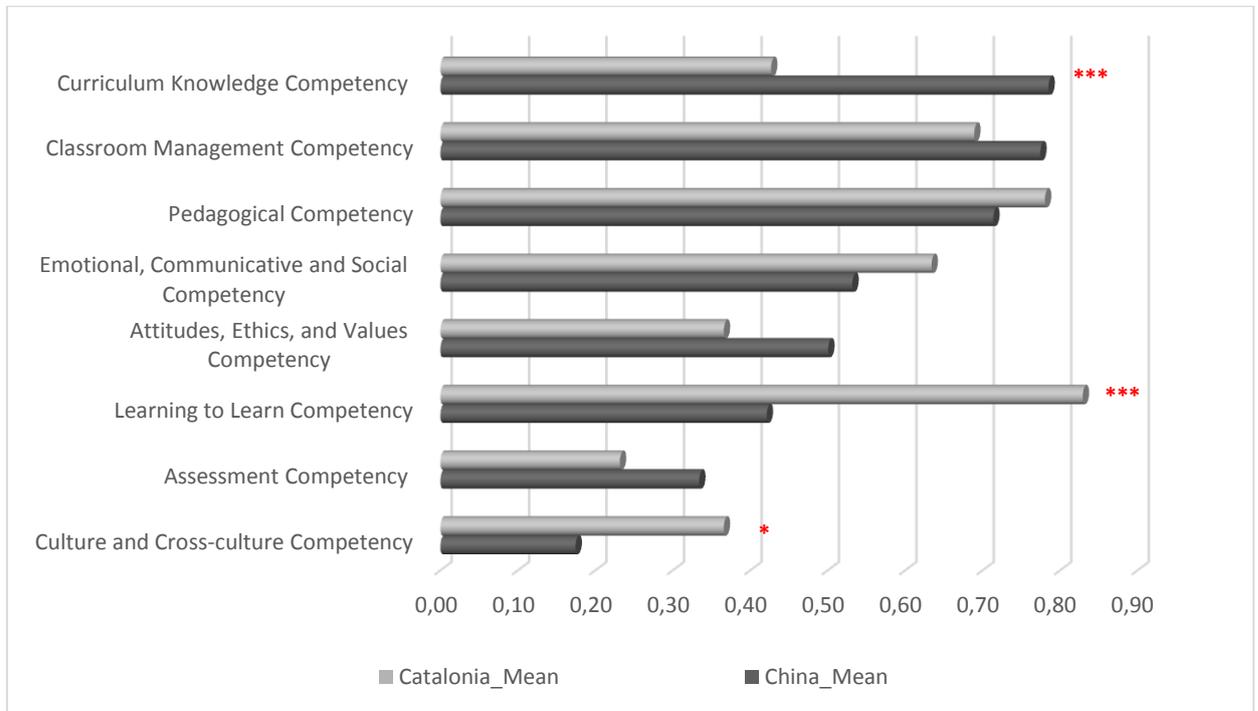
4.3.1 Which are the most important key competencies for the Chinese and Catalan teachers?

After categorizing the 5 answers that teachers responded by the Question 2 (what are the 5 most important competencies for their work), we counted how many times the categories appeared in the answers. The categorization process was not exclusive (one answer could be related to more than one category), so the number of times that one category can be mentioned range from 0 (none of the answers are related to this category) to 5 (all answers are related with this category).

Overall, Chinese primary teachers consider that the Knowledge Competency, Classroom Management Competency and Pedagogical Competency are the most important competencies, while Learning to Learn Competency, Pedagogical Competency, and Classroom Management Competencies are the most key competencies for Catalan group (see Figure 1). Further analysis showed that Chinese teachers believed that Curriculum Knowledge Competency was more important than Catalan teachers did ($M= 0.79$ vs $M=0.42$; $p< 0.001$). On the other hand, Catalan teachers pointed out that Learning to Learn competency and Culture and Cross-cultural Competency was more important than Chinese teachers did ($M=0.82$ vs $M=0.42$; $p<0.001$; and $M=0.37$ vs $M=0.17$; $p<0.05$; respectively). Nevertheless, both groups shared the same view on the importance of Pedagogical and Classroom Management Competencies and others such as Emotional, Communicative and Social Competency and Attitudes, Ethics and Values Competency.

Figure 1.

Comparing Chinese and Catalan teachers' view on ranking of the important key competences in overall level



Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

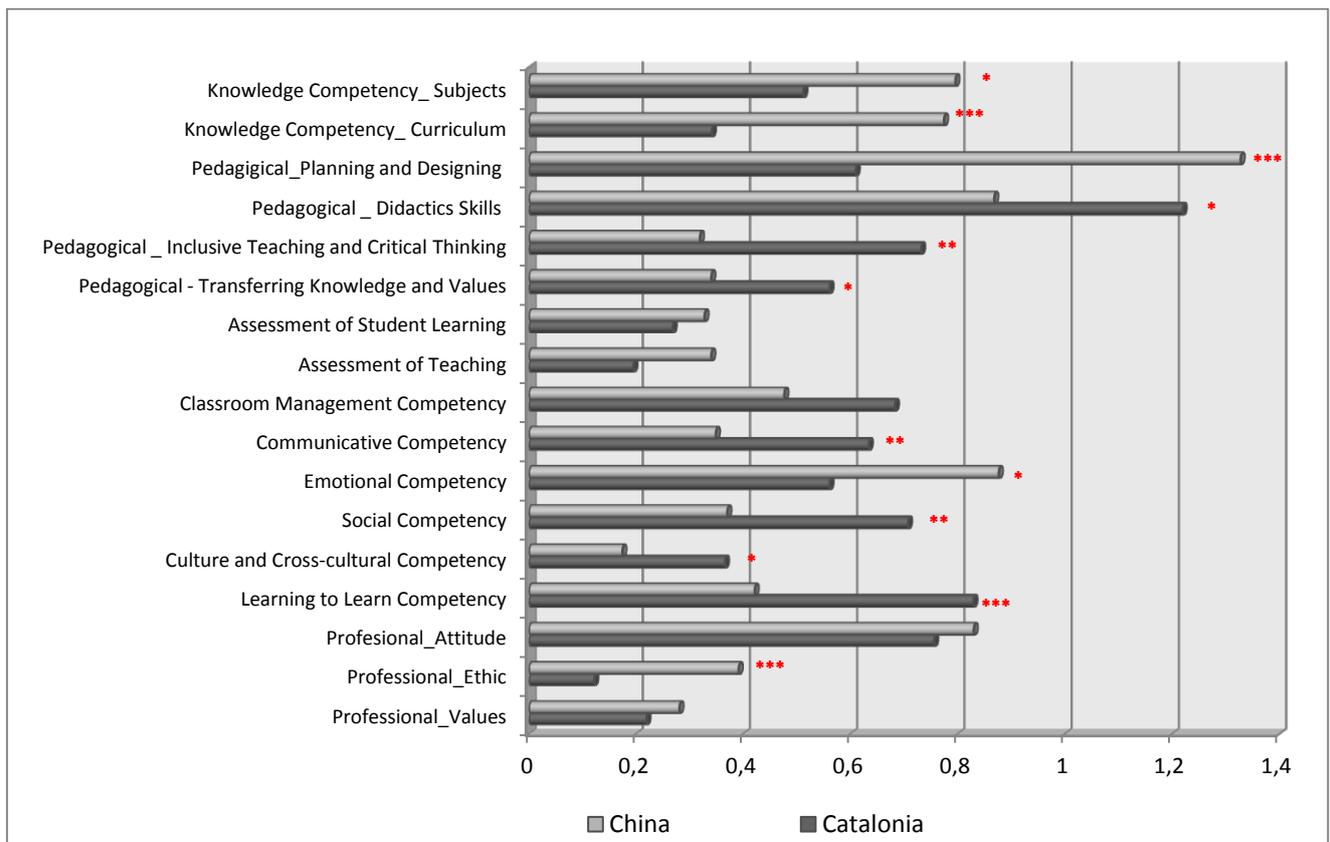
However, the t-test analysis revealed that there were significant differences amongst each sub-category of Pedagogical Competency, Emotional, Communicative and Social Competency and Attitudes, Ethics and Values Competency between Chinese and Catalan participants (see Figure 2).

The analysis of the sub-categories of Pedagogical Competency found that Chinese teachers give more value to planning a lesson with pedagogical content knowledge and the ability of researching on teaching content and deep learning than Catalan teachers, while Catalan teachers stressed more about using ICT in didactic and

ability of inclusive teaching and transferring knowledge into real life to students than Chinese teachers (See Figure 2).

Figure 2.

Comparing Chinese and Catalan teachers' views on the importance of sub-categories key teacher competences



Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Additionally, among the sub-categories of Emotional, Communicative and Social Competency, for Chinese teacher's Emotional Competency (to be patient for students and having enthusiasm for teaching), was more important than for Catalan teachers. By contrast, for Catalan teachers Communicative Competency and Social Competency were more important than Chinese primary teachers (See Figure 2). And,

under the sub-categories of Attitudes, Ethic and Values Competency, Chinese teacher valued more important the Ethic Competency rather than Catalan teachers.

4.3.2 Had the gender and years of teaching an influence on teachers' views of key competencies?

A T-test was conducted to analyze the gender differences on each key competence. T-test showed only a significant difference on the Communication Competence. Specially, Chinese female teachers named this competence more frequently than male teachers (0.14 vs 0.39, $p < .01$). Catalan female teachers also considered this competence more important than male teachers, but this difference was not significant. Additionally, Pearson correlation between years of teaching and each key competence, showed that there was a significant correlation within Catalan sample between the years of teaching and the Attitudes Competence key competence ($R = 0.427$, $p = < .01$).

4.3.3 Where did teachers learn the key teacher competencies?

University training and school practices are two main stages of the teacher learning key competencies process. Through analysis teachers' answers in **Question 3** (*which competencies are learnt in university?*) and **Question 4** (*which competencies are learnt in school practice?*) of the teacher's questionnaire; it was found some differences between Chinese and Catalan teachers (See *Table 16*).

Table 16.

Two group teachers' key competencies learnt process (University Training and School Practice)

Competencies	Chinese teachers answers		Catalonian teachers answers		University training				School practices			
	University	Practices	University	Practices	Chinese (N=202)	Catalonian (N=35)	χ^2	p	Chinese (N=209)	Catalonian (N=38)	χ^2	p
Subjects Knowledge	67.82%	0.00%	8.57%	10.52%	67.82%	8.57%	43.31	.000	0.00%	10.52%	22.36	.000
Curriculum Knowledge	19.31%	1.50%	11.43%	7.89%	19.31%	11.43%	1.25	.264	1.50%	7.89%	5.66	.017
Pedagogical_ Planning and Designing	36.63%	16.70%	14.29%	15.79%	36.63%	14.29%	6.70	.010	16.70%	15.79%	0.02	.884
Pedagogical _ Didactics Skills (organizing and using ICT)	10.40%	30.10%	28.62%	35.10%	10.40%	28.62%	8.67	.003	30.10%	35.10%	0.37	.545
Pedagogical _ Inclusive Teaching and Critical Thinking	0.49%	9.50%	22.86%	42.11%	0.49%	22.86%	40.83	.000	9.50%	42.11%	28.82	.000
Pedagogical - Transferring Knowledge and Values to real life	0.49%	7.20%	11.43%	15.79%	0.49%	11.43%	17.27	.000	7.20%	15.79%	3.07	.080
Assessment Students Learning	0.00%	3.50%	5.71%	5.26%	0.00%	5.71%	11.64	.001	3.50%	5.26%	0.34	.562
Reflecting Teaching	0.49%	5.00%	5.71%	7.89%	0.49%	5.71%	6.54	.011	5.00%	7.89%	0.62	.430
Classroom Management	1.98%	23.45%	2.86%	7.89%	1.98%	2.86%	0.11	.735	23.45%	7.89%	4.68	.031

Competencies	Chinese teachers answers University Practices		Catalonian teachers answers University Practices		University training				School practices			
	Chinese (N=202)	Catalonian (N=35)	χ^2	p	Chinese (N=209)	Catalonian (N=38)	χ^2	p				
Emotion Competency	4.95%	17.25%	17.14%	28.95%	4.95%	17.14%	7.101	.008	17.25%	28.95%	2.87	.090
Communicative Competencies	2.48%	13.95%	40.00%	52.63%	2.48%	40.00%	57.96	.000	13.95%	52.63%	30.37	.000
Social Competency	0.49%	10,50%	34.28%	26.32%	0.49%	34.28%	65.70	.000	10.50%	26.32%	7.83	.005
Culture and Cross-Culture	0.99%	0,50%	11.43%	10.52%	0.99%	11.43%	13.32	.000	0.50%	10.52%	16.37	.000
Learning to Learn	1.98%	6.25%	17.15%	40.47%	1.98%	17.15%	16.970	.000	6.25%	40.47%	36.71	.000
Attitudes	5.91%	21.00%	11.43%	15.79%	5.91%	11.43%	1.449	.229	21.00%	15.79%	0.64	.422
Ethic	2.48%	3.50%	0.00%	2.63%	2.48%	0.00%	.705	.401	3.50%	2.63%	0.05	.818
Values	0.00%	4.30%	0.00%	0.00%	0.00%	0.00%	.039		4.30%	0.00%	1.70	.193

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Chinese primary teachers answered that they learnt their competencies of Curriculum and Subject Knowledge and, Lesson Planning mainly at university; but other competences were learnt mainly in School practice: Didactics, Classroom Management, Emotion and Communication. And Catalan teachers reported that they learnt Didactic and Teaching Diversity as well as Communicative, Social Competency both in university training process and through the school practices; however the school practices seemed to play a major role in the acquisition and development in all of the key competencies except for Social Competency.

Chi- square test showed that there were significant differences between Chinese and Catalan primary teachers: Chinese teachers learnt at University more Subject Knowledge competency than Catalonian teachers [67.82% vs 8.75%; $\chi^2 (1, 237) = 43.316, p < 0.001$]; and Chinese teachers also learnt at University more Lesson Planning competences than Catalonian teachers [36.63% vs 14.69%; $\chi^2 (1, 237) = 6.704, p < 0.05$].

Except above mentioned difference, Chinese and Catalan teachers shared some views on the importance of school working for learning and improving their key competencies. Additionally, around 40% of both two group teachers answered that they mainly learnt the theoretical knowledge in their university training process. And, 12.87% of Chinese teacher and 14.29% of Catalan teacher answered that they nearly learnt nothing or very little from his or her university training process.

4.3.4 Professional goals

Data analysis showed that Chinese primary teacher and Catalan primary teacher held different views on their professional goals. The main differences were that most Chinese teacher mentioned goals focused on their personal career development, while Catalan teachers' professional goals were more focused on student's development (See *Table 17*).

Table 17.

The percentages of Chinese and Catalan primary teachers' professional goals

Chinese Teacher N= 229 (6 missing data)		Catalan Teacher N= 37 (4 missing data)	
To be an excellent teacher and improving their pedagogical competency	62.88%	Helping students for learning useful skills and values for future life	81.08%
Educating healthy, happy and excellent students for society	29.26%	Educate students for being a good citizen, open-minded, autonomous	32.43%
To be a respected teacher by students, parents and social	15.28%	Promoting student learning process and applying knowledge skills	29.73%
To be a creative teacher in professional development	10.92%	Promoting the teaching more effectively with learning and reflective	8.11%
Achieving professional happiness	4.80%		

The main professional goals for Chinese primary teacher were more focused on teacher- centered approach than the Catalan teachers' ones: "to be an excellent teacher and improving their pedagogical competency" (62.88%), "to be a high moral and respective teacher" (15.28%), "to be a creative teacher" (10.92%) and "achieving professional happiness" (4.8%). Only 29.26% of the Chinese teachers' goals were student-centered professional. In contrast, Catalan teachers' professional goals were more oriented to learner-centered approach: "educating students for learning useful

skills and values” (81.08%), “educating students to be a good citizen” (32.43%), and “promoting students learning process” (29.73%).

4.4 Discussion

The results of this study showed important differences in the Chinese and Catalan teachers’ perceptions of key teacher competencies. Chinese teachers valued more Knowledge related competences while Catalan teachers valued more Learning to Learn and Cross-Cultural competencies. Furthermore they also disagree in the main teacher goals. Chinese teachers considered that teachers’ goals had to be focused on the teacher development, while Catalan teachers put the focus on the student development.

These differences could be associated with the education systems and their theoretical basis. These different perspectives could be summarized by Knowledge-Centered and Learner-Centered approaches (Darling-Hammond & Bransford, 2005). Chinese primary teacher reported that the Knowledge Competency was the most important, while Catalan primary teachers mentioned Learning to Learn Competency as the top one. The different teacher role in class and their different pedagogical approaches to teaching strategies could explain these differences. Literature showed that Chinese teachers believe that the most important role of teacher is teaching and transferring knowledge to students by well-planned and organized lessons (Lim, Yan, & Xiong, 2015; Shu-, 2013). Thus, the conventional task for Chinese school teachers is discussing and sharing advice on making the common lesson plans for the upcoming week as in their school work (Consortium for Policy Research in Education, 2007; Tang & Shao, 2014; Zhu & Xue, 2006; Egado & Valle, 2015). In contrast, Catalan teachers think that teachers must play a role of guiding student to learn through using tools and

setting questions in class. Thus, teacher should have the learning to learn competency to update their skills, and they must also teach these skills to their students to prepare them as a citizens for a changing world. Moreover, this different approach could explain the differences found in the Pedagogical competencies in this study. Chinese teachers valued skills of making a lesson plan with related knowledge, which are subject knowledge, pedagogical content knowledge, psychological knowledge of children development, as well as ability of research on teaching content to guide student deep learning. While Catalan teachers value more the ability of teaching students learning methods, such as guiding students learning in groups and using computer searching information. Therefore, the Knowledge-Centeredness is a main feature of Chinese group key competencies, which can be reflected by the Chinese national curriculum standards, content books, and examinations (EMPRC, 2012, 2013). In the contrary, under the influence of Constructivism and the Renovation Pedagogical Movements Catalan teachers rejects traditional teacher methods and believe that the student must be the principal actor to learn and develop their own knowledge in class (Pérez, 2011). Thus, the Learner-Centeredness is the main feature of the education in Catalonia (Spain), which is reflected in the primary education curriculum in Spanish - competency based primary school education - formulated by Spanish educational ministry (Crujeiras & Jimenez-Aleixandre, 2013; Cots & Nussbaum, 2008; Tiana, Moya & Luengo, 2011).

Even though Chinese and Catalan teachers have opposite approaches, they agree that the classroom management competency is one of most important key competency for their school working. This is consistent with Darling-Hammond and her colleagues' study (2005), which showed that organizing a classroom is extremely important to create a positive environment for learning and to teach effectively (Darling-Hammond & Bransford, 2005). However, as the classroom size differences

(Brühwiler and Blatchford, 2011), two groups teachers used different strategies in classroom management. The Chinese primary classroom size is around 40 pupils per classroom, near the double than the Catalan ones, and this require high levels of classroom management skills and strategies. Chinese teachers used to create some learning group and to set some students' leaders to promote student self-discipline and behaviors guides. Even though the Catalan classrooms have fewer students (20-25) than Chinese ones, they also use to make students work in groups. Catalan teachers consider the Classroom a resource to develop Social and Team Work skills and values in their students. Under the socio-constructivism ideas Catalan teachers try to include a social and participative approach in the learning process, not only encouraging pupils to learn with others, but also encouraging parent's participation in the school works (Brühwiler & Blatchford, 2011; Vega-Marcote and Álvarez-Suárez, 2015). In addition to the assessment competency, both Chinese and Catalan teachers ranked it in lower important position. It indicated that both of these two teacher groups valued less on learning and teaching assessment in their school working. However, as the popular of international test on students' achievement and competencies, governments started to attach importance to teacher assessment competencies (Brühwiler & Delaney, 2012; Rogers, 2014).

Furthermore, the individual-oriented competencies (González & Wagenaar, 2005) (communicative, emotional and social competencies) are considered also very important by both Chinese and Catalan teachers. However, Chinese teacher thought emotional competency significantly more important than Catalan teacher did. This result could be related with Chinese teacher suffered heavy working stress caused by the teacher assessment methods based on their students' academic achievement in school. Therefore, teachers explained that they need more supports on emotional adjustment

(Yin & Lee, 2012). Conversely, Catalan teachers report that communicative competency and social competency (team working and social service awareness) are more important for their school working. This finding is consistent with other studies and Spanish education law (Cots & Nussbaum, 2008; Leone, 2014; Oller, Vila & Zufiaurre, 2012, OMCE, 2013) and can be related to democratic schools culture and tradition from the Renovation Pedagogical Movements that demands teachers to dedicate an important part of their time to team work and to get involved in the school projects and to link the school with the community. Additionally, the culture and cross-cultural competency is significantly important for Catalan teachers than Chinese teachers. This finding is consistent with the Catalan teacher education that highlights the respect for values to the multilingual and multicultural environment (BOE, 2007; Leone, 2014; Oller, Vila & Zufiaurre, 2012). Chinese researchers found that even though multicultural education has been highlighted as the immigration increasing, it is not a main feature in Chinese teacher competencies (Wang & Phillion, 2009).

Regarding to the competency learning process, it is known that the pre-service teacher education and in-service training are two critical steps for teacher competency preparation and professional development (Prasertcharoensuk, Somprach & Ngang, 2015). From this study, we found that Chinese teachers reported that they learnt mainly about knowledge, pedagogical knowledge during their university training process. While Catalan teachers reported that their university trained them more broad competencies, such as communicative, social and emotional competencies, culture and cross-cultural competency, and learning to learn. These findings are in accordance with the results of the comparison of teacher's key competencies. We found the different training models could lead to different results of teachers' view of the key

competencies. Moreover, these results are related with the education policies in teacher education and training related area in China and Catalonia (Spain). In China primary teachers specialized in one subject, and they can only teach this subject. But the Spanish system taking into account the psychology development consider that children in primary education need a strong reference in the school and this could not be achieved if the teacher change depending on the subject. So in the Catalan primary schools children spend most of their time with a teacher-tutor that teaches them most of the subjects; and only there are few subjects that has a specialized teacher. In the same vein, these two models that come from different Educative tradition and theories also have a deep impact in the teacher goals: teacher-centered and student-centered. Thus most of the differences can be attributing to different culture, educative theories influences and policies guides (BOE, 2006; ECD, 2015).

4.5 Conclusion and Limitations

China and Catalonia Education system have been deeply influenced by their Culture, Society, Philosophy and Educative theories. As a result Chinese educative system is more knowledge-centered and Catalan system is more competency-based and inclusive. Moreover Chinese and Catalan school structures have also important differences (classroom size, teacher organization, etc).

So it seems plausible that even though Chinese and Catalan teachers recognize the need to develop similar teacher competences, they give different values to these competences. In general, Chinese teachers value more Knowledge-Centered

competences and have goals focused to their own professional development while Catalan teachers value more Learner-Centered competences and have goals focused to the students developments. These two perspectives can have deep impacts on the student's development. Subject knowledge centered education can improve an array of specific knowledge and skills. In fact, PISA studies provide evidence of the China good results. However, Learning to Learn and cross-cultural competence can improve the innovative skills and social harmony. In fact, Catalonia is a Spanish region with a big mixture of cultures with a peaceful coexistence.

Reading to some limitations of this study, in this study we did not get equal number of teachers in each group. Chinese primary school hold a relative larger number of teachers compared with Catalanian ones. And we use opportunity sampling to choose participants. In the future study would be necessary to increase when it expands the sample of Catalan teachers in order to get more evidence on comparing their differences and similarities amongst teacher key competencies.

Finally, some findings could be explained as the result of mixed culture and classroom size influence; therefore it's difficult to analyse how these effects play part. Also, teacher key competencies perspective could be affected by different factors such as education and training policies, school system, training, and their professional goals, which were not measured in the study. However, the survey results provide an interesting perspective to explore deeper in future study.

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IV. Study II

A comparative study of pre-service teacher key competencies in the Chinese and Catalan primary teacher education programs

Abstract

Teacher education is the initial crucial stage which plays a foundational role in professional mind-sets and provides the new teacher with a basic toolbox to make meaningful learning happen in future classrooms. This study aimed to compare the Chinese and Catalan teacher education programs and to know how key teacher competencies are trained by their teacher education programs through content analysis of three cases (teacher education programs) and interviews. The results showed that the main difference is that Chinese program emphasis on training specialized teachers (one teacher pre subject) with the subject matter knowledge, pedagogical skills and research ability, as well as professional attitudes and ethics. Whereas Catalan program highlights training cross-subjects teachers with competencies of teaching different subjects, critical thinking, inclusive teaching skills, social and culture awareness, as well as communication and cooperation skills. Additionally, Chinese educators use more teacher-centred teaching methods in classroom and knowledge-based evaluation, while Catalan educators provide more learner-centred teaching methods and flexible evaluation methods in training future primary teachers. Thus, this research provides a better understanding of the Chinese and Catalan teacher key competencies, which will benefit future collaborations from a cross-cultural teacher preparation and training.

Key words: Teacher competencies, Teacher education program, Curriculum, Internship

5.1 Introduction

Teacher education is the initial crucial stage which plays a foundational role in a professional mindset and provides the new teacher with a basic toolbox to make meaningful learning happen in future classrooms (Darling-Hammond, 2005, Evans, 2002). During this stage, pre-service teachers should develop basic professional knowledge, skills and attitudes for their future school work.

5.1.1 Literature review of teacher key competencies for pre-service teachers

Teacher competence is a combination of knowledge, skills, values and attitudes that contribute to a teacher's appropriate professional conduct in a given situation (Caena, 2011; Mc Clelland, 1998; European Commission, 2013). Moreover, it provides a perspective to illustrate which knowledge, skills, and attitudes the trainee teacher should develop to be a "well-qualified teacher". The teacher education program is an intensive experience that can train student teachers to acquire key competencies in knowledge, skills, and attitudes (values and ethics).

5.1.1.1 Knowledge (general knowledge and specific knowledge)

According to Darling-Hammond and her colleagues' researches (2000), "well-qualified teachers" should possess both strong disciplinary knowledge and substantial knowledge of education. This will prepare teachers to both teach the subject and solve related problems posed to students, and to know that there are multiple approaches to solving many problems (Grossman, Schoenfeld & Lee, 2005). Thus, pre-service

teachers should have both specific knowledge of training and general knowledge of education. More importantly, pre-service teachers need to learn *Knowledge of Learners & their Development in Social Contexts* (Learning, Human development, Language), *Knowledge of Subject Matter & Curriculum Goals* (Educational Goals and Purposes for skills, content, subject matter), and *Knowledge of Teaching* (Teaching Subject Matter, Teaching Diverse Learners, Assessment, Classroom Management) (Darling-Hammond, 2005). These three areas of knowledge should be designed into teacher education programs to train student teachers in competencies for general education courses, professional teacher education courses, and subject-matter courses.

Furthermore, in order to help students develop their deep learning ability, the pedagogical content knowledge should be paid greater attention in pre-service teacher education (Cator, Schneider & Ark, 2014). An effective teacher not only needs to know how students tend to understand (and misunderstand) the subject, but also know how to anticipate and diagnose such misunderstandings and know how to deal with them (Darling-Hammond, 2005). In this way, teachers will start to build their understanding of students' subject matter reasoning and understanding from students' learning mistakes. This kind of knowledge has been termed pedagogical content knowledge (Darling-Hammond, 2005; Shulman, 1987). More importantly, teachers will be able to help students to conduct deeper learning (Jensen & Nickelsen, 2008). Therefore, to be "well-qualified teachers", learning about students' content-related understanding should go beyond mastery of the subject content, and beyond common sense pedagogy, and deserves serious and sustained attention in the teacher education curriculum (Darling-Hammond, 2005; Grossman, Schoenfeld & Lee, 2005).

5.1.1.2 Skills (technical skills and social skills)

Based on the knowledge training, a broad set of basic teacher skills should be developed in training courses, such as skills of designing a curriculum, teaching strategies for working with diverse pupils, classroom management and assessment of student learning. A good curriculum and lessons planning should take into account the understandings of students' cognitive development and their zone of proximal development in a "developmentally appropriate" manner (Darling-Hammond, Chung & Frelow, 2002). Moreover, effective teaching for supporting student learning is related to teaching strategies, lesson designing and guiding diverse learners to learn in a positive learning environment (Darling-Hammond, 2000). Furthermore, according to the Teaching and Learning International Survey (OECD, 2013), teachers' technical competencies of using ITC and assessment of student learning process are essential for effective teaching. Therefore, teacher education program designers should address training student teachers in the above skills; and educators should adjust their teaching methodologies to guide students in learning these skills, for example through clinical experiences involving observing and modeling with guided reflection (Darling-Hammond, 2005).

Recently, teachers' social and emotional skills and competencies are considered essential training in the pre-service teachers programs (Jennings & Greenberg, 2009, Jennings, et al., 2014). According to Jennings and Greenberg' research (2009), teachers' social and emotional competence has a positive effect on supportive teacher–student relationships and effective classroom management. More importantly, teachers who possess social and emotional competence are less likely to experience burnout. The later study found that training teachers' social and emotional competence can improve

classroom atmosphere which may result in improvements in students' academic achievement (Jennings, et al., 2013). However, current teacher preparation programs do not focus on training teachers' social and emotional competence (Jennings & Greenberg, 2009). Additionally, other interpersonal skills should be highlighted in teacher education programs, which include communication skills, collaborative ability (European Commission, 2013a; Feiman-Nemser, 2008; Williamson Mcdiarmid & Clevenger-bright, 2008). Thus, teachers' technical skills, as well as social-emotional competencies and solid knowledge of subject matter and knowledge of how to teach are essential in training future teachers.

5.1.1.3 Attitudes and values

It is important to start to develop teachers' professional attitudes and values at the first stage of their initial education. Some university programs set courses to guide pre-service teacher by developing their professional attitudes and values (Chen, Yang & Li, 2013). According to Caena's study (2014), the common teacher competences of attitudes ground across education cultures and traditions can be expressed as positive attitudes to ongoing professional development, as well as the critical attitudes towards professional practice and innovation (European Commission, 2013a; Feiman-Nemser, 2008; Williamson Mcdiarmid & Clevenger-bright, 2008). In addition, researches pointed out that teachers' high degree of responsibility to diverse students also has a significant influence on the quality of their learning opportunities (Darling-Hammond, 2005). Therefore, primary teacher education programs should pay attention to training pre-service teachers in professional attitudes and values.

5.1.2 Programs of Teacher Education in China and Catalonia

How are these key competencies trained? Teacher education programs are like “carriers” which make student teachers develop these key competencies through a series of training courses. However, as the culture and education systems differ, there are different teacher education programs serving their own social culture and education context. It is known that the core purpose of primary education is to enable the development of all children to take their place in adult society with the competencies to be positively contributing members to the society (Caena, 2014b, Darling-Hammond, 2005). Thus, the primary teacher education community has responded by helping pre-service teachers acquire key competencies to serve primary education goals and systems.

5.1.2.1 The main Characteristics of Chinese primary teacher education programs

In China, as teacher education is being reformed, current Chinese primary teacher education programs are mainly based on the four years university training which includes about one year’s general education courses and three years’ specialized teacher courses and practices (Yang, 2009, Yu, 2013). In some cases, they provide additional two years for Master’s degrees, such as the Free Teacher Education Programs in six national universities, belonging to the Central Education Ministry (Jin, Li, and Ding & Li 2013).

However, there are not a unified primary teachers training module issued by the Central Chinese Education Ministry in course design and credits. The central government provided general education principles and basic standards (Teacher, 2011

& 2012). National and local universities have more flexible rights to design and implement their teacher education programs. For instance, in Southwest University (SWU), a mixed teacher education program (primary and secondary school) is implemented under 15 separate faculties especially for training teachers in each subject. While at the Zhejiang Normal University (ZNU), primary teacher education is preparing future primary teachers for teaching cross-subjects divided into two branches (arts and sciences) under the education faculty. Numerous school employers prefer to choose teacher candidates from the mixed programs, which are supposed to develop student's deeper specialized knowledge (Yang, 2009; Zhang, 2012). Moreover, the mixed program is directly matched with current Chinese primary and secondary school systems which are organized one teacher per subject with higher specialized training in his/her subject. However, some Chinese researchers think that this sub-specialties training module is over emphasized on subject matter knowledge, which lacks cross-subjects teaching ability for helping pupils' whole development (Huang, 2009; Yang, 2009; Zhang, Shen, & Lin, 2003, Zhou, Li, Deng & Xue, 2007).

5.1.2.2 Key competencies required in Chinese primary teacher education

There are some general standards for key competencies in training future primary teachers according to Primary School Teacher Professional Standards (Trial) and the "Curriculum Standards of Teacher Education" in China (Teacher, 2011a & 2011b). They require teacher education programs to train student-teachers 64 specific competencies in three areas: professional ethics, knowledge and skills. A teacher's ethics and attitudes are the principal requirement, which includes learning professional ethics-related knowledge for building positive attitudes and developing correct

professional values for primary education. The second important area involves professional knowledge and abilities such as understanding children psychological development and learning, knowing subjects, curriculum, and pedagogical knowledge, and having knowledge of personal development ability. The third one is developing teaching and interpersonal skills through the practices which include having observation and practice experiences during courses, designing a lesson which includes 1-2 teaching activities, guiding students, classroom management and social communication with community members and parents, developing skills and designing activities. For instance, the teacher education programs of the SWU and ZNU were designed based on curriculums, practice (internships) and activities (such as teaching competition) to train future teachers key competencies in these three basic required aspects.

5.1.2.3 Main Characteristics of Catalan primary teacher education programs

In Catalonia (Spain), the Spanish central government formulates and unifies the primary teacher education in several aspects, such as training years, courses, and credits (ECTs) (BOE, 2007). Basically, it requires four-year training with 240 credits which 210 credits are fixed by Spanish government-ruled courses, and other 30 credits are flexible, designed by the universities. Since the primary teacher education program is required to serve the current primary school education, teacher candidates need to hold a teacher certificate in the following specialities: primary education, music, physical education, foreign language, special education or speech therapy (European Agency 2015). According to the Improvement of the Quality of Education (LOMCE), teachers in primary education are allowed to teach in all areas of knowledge in this educational stage and in students' tutorials. Thus, their primary teacher education program is

required to prepare cross-subject teachers through courses in academic and theoretical aspects and on pedagogical practice (European Agency 2015; OECD, 2015). Moreover, Spanish primary schools implement inclusive education and the education system offers teachers help through specialists in special education and speech therapy. Thus, basic training in special education for all students is one core subject for trainee teachers.

5.1.2.4 Key competencies required in Catalan primary teacher education

According to primary education laws, primary school teachers need to educate pupils eight key competencies which are “competence in linguistic communication, mathematics, knowledge of and interaction with the physical world, processing information and use of ICT, social skills and citizenship, cultural and artistic competence, learning to learn, as well as autonomy and personal initiative” (LOE, 2006; Jesús Ruiz Nebrera, 2008). Thus, all subject areas should contribute to the development of as many competences as possible in pupils, and each one includes specific reference to the competences most associated with the area (Pla I Novell, 2009). Moreover, the Catalan primary teacher training program also addresses training students to obtain the appropriate competency through courses and internships. In particular, these competencies are required to train student teachers in such skills, planning lessons for teaching and learning, creating teaching spaces in contexts of diversity and inclusion, addressing effectively language learning situations in multicultural and multilingual contexts, collaborating with different sectors of the community from different social environments, reflecting on classroom practices and so on (BOE, 2007).

Research questions:

From the above literature, we know both China and Catalonia highlight future teacher education and their competencies. However, there is little known about their main differences and similarities in the training process of specific competencies and how these key competencies are trained in teacher education programs, such as courses, methods and internship. In this study, we will conduct a comparative analysis Chinese and Catalan primary teacher education programs with the following questions:

- 1) Which teacher competencies are trained in current Chinese and Catalan primary teacher education programs?
- 2) How are these competencies (knowledge, skills, attitudes, and values) trained in Chinese and Catalan universities through courses and internship? What kinds of methods are used in their training processes?
- 3) What are the main differences in competencies and training methods?

This research aims to improve the understanding of Chinese and Catalan teacher education, boost cross-national collaboration of key teacher competencies and training models as well as provide evidence-based suggestions for policy makers.

5.2 Method

This is a multiple case study which includes two cases from China and one case from Catalonia. We collected data through two methods: documents analysis - which used to know how Chinese and Catalan teacher education programs to train future primary teachers; and a semi-structure interview- which aims to know the program

development background and some details of each program with interviewing two program designers and one professor who well know of the teacher training program.

5.2.1 Participants

To select cases, we used a criterion sampling method (Mertens, 2010). In China, we selected Southwest University (SWU) and Zhejiang Normal University (ZNU) as two typical representative samples which did well in four-year teacher education program at national level and local level universities (Yu, 2013). In Catalonia, we selected Universitat Autònoma de Barcelona (UAB) as a representative sample since it ranked in the top of primary teacher education in Spain. These three universities' teacher education program plans were used to analysis in the following aspects: training objectives on teacher key competencies, curriculums, teaching resources and methodologies, as well as internship and practice (internships) and evaluations. Additionally, three professors were interviewed, two of them are program designers from SWU and UAB, and one is a professor who familiar with ZNU primary teacher education program.

5.2.2 Instruments

The interview outline was designed according to research aims with four main questions: what's the program designing background? Which key competencies do you think are important to prepare for the future primary teachers? How does the program training student teacher these key competencies in each training year? How to evaluate whether student has possessed or not these competencies? All these questions were

previously validated by experts and modified according to experts' feedbacks about the content of the interview outline.

5.2.3 Procedures (data collection and analysis)

The three documents are collected through university website (UAB) and teacher education related departments (in SWU and ZNU) which were not published online. After we developed the validated interview outline, we connected with three professors in each university to get the connection with the program designer. We made an appointment with each of them and got their agreements. Each interview took 50-70 minutes around, two designers' interviews of SWU and UAB are face to face, another one was by telephone.

Content analysis was used to analyze the data from both documents and interviews. First of all, we analyze which key teacher competencies are trained in these three documents based on our key competences theoretical framework (Study I). Secondly, we analyzed how these competences are trained and evaluated in these programs. These data are mixed analyzed into six aspects, for instance training models, courses, teaching methods, as well as internship and evaluation. Thirdly, we compared the differences and similarities between Chinese and Catalan teacher education program. Finally, we invited professors who are responsible for each programs to review these results of data analysis to make sure there is no misunderstanding in each program.

5.3 Results

5.3.1 Which teacher competencies are trained in Chinese and Catalan primary teacher education programs?

A content analysis was used to analyze the original data from three documents of teacher education programs and interviews. Based on the previous research review, teachers' competencies in knowledge, skills and attitudes are summarized and selected as eight key teacher competencies: Knowledge, Pedagogical, Assessment, Classroom Management, Communicative, Social and Emotional, Culture and Cross-culture, Learning to Learn, and Professional Values, Attitude, and Ethical (Ding et al., 2016). In *Table 18*, it shows the results of documents analysis of three teacher education programs from China and Catalonia.

Table 18.

Descriptions of the key competences which trained in Chinese and Catalan programs

Categories	China	Catalonia
Knowledge Competence	<ol style="list-style-type: none"> 1. General Knowledge (College English, Physics, Chinese, Principles of Marxism, Mao Zedong Thought, Cultivation of Ideological Morality and Basic Law, Military Theory, Teaching of Situation and Policy, Computer and information technical, Career development and employment) 2. Subject(s) knowledge 3. Psychological knowledge 4. Research methods knowledge 5. Educational laws and polices 	<ol style="list-style-type: none"> 1. Knowledge about education and educational contexts. 2. Subject-related knowledge (Languages, Mathematics, social culture and science, music and arts, physics). 3. Psychological knowledge 4. Knowledge of social, cultural and human right 5. Educational laws and polices
Pedagogical Competence	<ol style="list-style-type: none"> 1. Pedagogical (content) knowledge 2. Skills of planning, designing a lesson 3. Familiar with primary subject teaching methods and content 4. Ability of organizing some learning activities, 5. Using ICT in instruction, 6. Guiding pupils' learning with Psychological knowledge 7. Sharing teaching experiences with colleagues 8. Ability of doing researching on teaching 	<ol style="list-style-type: none"> 1. Pedagogical (content) knowledge 2. Skills of planning a lesson and implementing of teaching plan 3. Creative positive environment to support diverse student learning in diverse contexts that address gender equality, equity and respect for human rights which satisfy the values of citizenship education. 4. Encourage pupils learning in group and developing pupils' teamwork 5. Ability of inclusive teaching,

	content and projects,	<ol style="list-style-type: none"> 6. Addressing on teaching pupils' competences development 7. Using ICT in instruction and guiding pupils using ICT learning in teamwork.
Assessment Competence	<ol style="list-style-type: none"> 1. Correcting students' homework 2. Assessing student learning outcomes 3. Reflecting teaching in a class 	Using assessment tools to understand student learning process and provide feedback as well as reflect on and improve their own teaching process.
Classroom Management Competence	<ol style="list-style-type: none"> 1. Topic classroom meeting 2. Organizing classroom activities 3. Encouraging students to be self-disciplined 	Management students group working Organizing projects and presentations by students groups.
Communicative, Emotional and Social Competence	<ol style="list-style-type: none"> 1. Be able to speak standard Mandarin 2. Good oral expression skills and writing skills 3. Having communication skills with students and their parents, as well as colleagues, 4. Have ability to deal with stressful woke 5. Understanding students' learning related emotional problems. 6. Possessing social responsibility in school working. 	<ol style="list-style-type: none"> 1. Communication ability in mother language and foreign language, 2. Have skills to communicate with student, their parents, school colleagues and community. 3. Having cooperative ability with others stakeholders 4. Having interpersonal social skills, 5. Having civic awareness.
Cultural and Cross-cultural Competence	The cultural and cross-cultural education in primary teacher program is not highlighted. I only can find in history teacher education about the culture knowledge of Chinese 56 minorities.	Cultural and cross-cultural is highlighted in Catalan education, such as understanding one's own culture and competently teaching students from multicultural backgrounds.
Learning to Learn Competence	<ol style="list-style-type: none"> 1. To bring up awareness of lifelong learning 2. To be a lifelong learner 	<ol style="list-style-type: none"> 1. Skills of learning and learning 2. To be a lifelong learner
Professional Values, Ethics, and Attitudes Competence	<ol style="list-style-type: none"> 1. Having strong responsibility awareness for pupils. 2. Having professional identity and ethics and positive attitudes towards barriers. 3. Loving primary teaching and pupils. 4. Building professional values and ethics of future career and service to Chinese social development. 	Training student teacher about the identification, practice and attitudes defend gender equality, human and citizenship right.

Table 18 shows that both Chinese and Catalan teacher education programs train these eight key competencies. However, as the culture and education systems different, there are different content in these eight key competencies. Such as, in the knowledge competence, Chinese primary teacher education includes general knowledge but Catalan one does not. Both of them are training pedagogical competencies, but Catalan program addresses on teaching competencies in inclusive teaching, multilingual education, as well citizenship education and human rights; while Chinese programs do not. Moreover,

there are more differences in the content of individual competencies such as social emotional competence, culture and cross-culture competences, as well as values, ethics and attitudes which can be seen in *Table 18*.

The results of data interview analysis show that these three programs shared a similar situation about the background of their programs designing which means these new programs are more addressing on the importance of practice course than the old ones.

SWU (Prof. Zhang): "When we talked with school employers who come to SWU to employ new teachers, they told us that school needs new teachers who can directly teach in classroom, so they hope university can provide more training focusing pre-service teacher practice skills in a classroom teaching than theoretical knowledge. So, in 2007, according to the national policy of No-fee teacher education program, we developed 7 courses for training basic teacher skills in teaching...." (Interview with the designer of SWU program)

ZNU (Prof. Li): The new primary teacher education program is highlighted on training student practical skills in a real situation through four years' practice courses. Students need contact with primary school and classrooms..... (Interview with professor of ZNU who is familiar with the program)

UAB (Prof. R. M), "...According to the new Spanish education Law, There are two changes to our designed new primary teacher education program in 2008, which are making three years education program into four years and setting five practice courses and adding more credits to practice (about 50ECTS) for students from the second year to the fourth year....." (Interview with the designer of UAB program)

Thus, during 2007-2008, the new programs are more highlighted on training pre-service key competencies in practice level (teaching and classroom management) than the old ones. Furthermore, both Chinese and Catalan program designers believe teacher's competencies of social and emotional, cultural and cross-culture competencies, learning to learn as well as attitudes, values and ethic can be trained in university. While they deploy different methods on training these mentioned competencies, which will be explained in their curriculums designing and teaching methods of each program.

5.3.2 How these competencies are trained in Chinese and Catalan programs?

Chinese primary teacher education programs are flexible and complicated, which means that different university and faculties have rights to design their own teacher training programs (Huang, 2009). But, basically, all of the four-year university teacher education programs include one year of general education and other three years of specialist education on subject-mattered courses, teacher and teaching basic skills training courses. While, Spanish government establishes the content of the primary teacher education program for all universities. Normally, these programs do not include general courses as Chinese ones. The following part will explain their differences in four aspects: curriculums, teaching resources and methods, internships and evaluation methods.

5.3.2.1 Curriculum

Basically, the curriculum module of the teacher education program at SWU is constituted by four area courses, such as, general education courses, basic subject courses, professional development courses (including subjects development and teacher specialized courses) and teaching practice courses (Chen, Yang & Li, 2013). There are 17 major fields of this teacher training program which is a mixed training both primary and secondary teachers under seventeen department or colleges. Each college is especially responsible for training certain subject courses and some of the professional courses. So the subject courses were designed by each department or college, and there are different requirements for the credits on different subject courses from 108-114 credits. The general education courses and teacher education courses are designed by university and Teacher Education Faculty which have unified requirements with 38 credits and 18 credits separately. This training model aims training future teachers with key competencies in general and specialized knowledge, skills of teaching and researching as well as professional attitudes and ethics.

The curriculum of ZNU primary teacher education program requires student complete minimal 160 credits through general education courses (42 credits), subject and professional courses (88 credits), as well as practice courses (30 credits) and other optional courses (minimal 4 credits). According to ZUN program, their curriculum designing was aimed to train students three areas ability which includes research ability training, psychology ability training, and teaching skill and technology ability training (called RPT). This program provides student teacher competences for teaching cross-subjects, but it also divided student teacher into two areas (Social subjects and Science subjects) in the third and fourth year training.

Table 19.

Descriptions of the main courses categories and their percentages of three teacher education programs

SWU			ZNU			UAB		
Name	Credits	Percentages	Name	Credits	Percentages	Name	CET S	Percentages
General Education	34-46	21.1%-30%	General Education	42	26.25%	Basic Formation	60	24%
Basic Subjects	6-12	7.3%-32.8%	Subject and Professional Courses	88	55.00%	Didactic and Discipline	100	41.6%
Professional Development	17-55.5	10.0%-32.84%						
Teacher Education	16	5%-17.64%						
Optional Courses			Optional Courses	4		Optional courses	30	
Internship	18-24	11%-14.1%	Internship	26	16.75%	Internship	50	20.8%

The curriculum of UAB primary teacher education program is competency-based training program reflected in courses designing which can see that there are lists of requirements of key competencies to develop students in each course by the program and curriculums plans in each year. There are three kinds of compulsory courses unified by Spanish government which are basic formation (60 ECTS), didactic and discipline (100 ECTS) and practice (50 ECTS) as well as the optional courses (30 ECTS) which designed by university and departments. All of these courses are designed to train student competencies for teaching within the context of the Catalan school system.

The common curriculum in both SWU and ZNU teacher training programs is the General Education Courses which take around 21.1%-26.25% credits in total level. These courses provide a basic and general training which trained all undergraduate students in collage English, Physics, Computer and Information, Philosophy, Cultivation of Ideological Morality, Chinese history, and Undergraduate career

development guides. However, they are different in basic subject-related courses and professional development courses. In SWU program, it highlights on providing deep specialized knowledge in each subject-related major field, for instance, mathematic student teachers should take 49.4% credits courses in mathematic. While courses designing in ZNU program is more focusing on practice general teacher to teach cross-subjects in arts or science areas. Thus, there are courses of teaching primary Chinese, Social subject, Mathematics, Science, primary classroom management, music and drawings, handwriting skill as so all. However, the SWU program provides 7 basic courses special for training all subjects' student teachers teaching skills, such as oral expression, writing, technology application ability, student's psychological education, as well as music and art. In ZNU, these abilities training are mixed with subject-related courses. Thus, it can know that the designed curriculums of Chinese programs are highlighted on general knowledge, teaching, and subject-related knowledge, as well as teacher basic skills which take over 80% credits.

The curriculum of UAB primary teacher education program was designed in three main areas which are basic formation, didactics and disciplinary, internship and optional course. The basic formation courses include eight subjects to make students familiar with education and education contexts, social context and school management, teaching methods and curriculum development, teaching differences and inclusion, as well as learner's knowledge in psychology. Then, the courses named didactics and disciplinary is focused on training students how to teach primary courses, such as language, mathematics, social and science, music and art by mother language (Catalan and Spanish) and foreign language (English). These courses are focusing training student key competencies in teaching different subjects with pedagogical and

psychological and sociological knowledge. Finally, the practice part includes five kinds of internships or practices courses to help student familiar with the primary school, classroom and doing some subject teaching practice through these four years. Beside these compulsory courses, the university designed another 30 ECTS optional course.

5.3.2.2 Teaching resources and methodologies

According to the data analysis of programs and interview, I summarized the main factures in teaching resources and methods described in three programs of SWU, ZNU and UAB and program designers. In Table 20, it provides most frequently described methods to explain China and Catalan programs on how to teach pre-service teacher to possess key competencies in the university classroom.

Table 20.

Summary of the teaching resources and methods in Chinese and Catalan university classes

	China	Catalonia
Teacher number per course	One course is conducted by one educator.	It's common to provide more than one teacher to teach a course, such as 4 teachers to teach the course of <i>Education and Education Contexts</i> . Four teachers can provide different perspectives to teach students.
Teaching and Learning Resources	In SWU, textbooks are provided freely by university and faculties. Additionally, SWU provides more learning resources to student learn and develop their competencies such as the database of school teaching samples, curriculum resources center and ability training center. In ZNU, the materials of general courses are unified by university. Other teaching and learning books of subject-related and professional courses are recommended by faculty or professors who are experts in each field.	Generally, there is not unified teaching and learning materials. But there is a general guideline for each course and a coordinator to support teachers in each area. Teachers or educators preparing their lessons and teaching content through searching information from different books, published papers and internet resources according to their experience. And, teachers provide some reading materials and advise different readings through campus virtual.
Teaching Forms and	<ul style="list-style-type: none"> Lecture. Educator focus on explain the content to students which is 	<ul style="list-style-type: none"> Lecture. Teacher explains the content of his or her prepared

Methods	<p>prepared before a lesson by the course teacher. Student and teacher have less interactivity. (About 70%).</p>	<p>lesson. There are some interactivities between teacher and students. Teacher often uses questions to guide student thinking (50%).</p>
	<ul style="list-style-type: none"> Students give a lesson or present some parts of teaching topics to classmates and teacher. Such as, after teacher gives a lecture of the theoretical knowledge's in <i>Primary Chinese Teaching</i>, students need choose a related topic which taught in current primary school and prepare a lesson. The next class, the student need give the lesson. Not all students required to do like this, only the volunteer student will give a lesson. And she or he will get relative higher performance mark in this course. (5-10%) 	<ul style="list-style-type: none"> Group discussion. After a lecture, there is a discussion part which organized by group to discuss the topics or question which teacher give in lecture. After the discussion, student will give an oral report to share their group discussion summary. And teacher will give a conclusion of students' discussion (40%-45%). Group presentation and role play Students prepare a lesson about a topic of primary subjects and present to classmate and teachers in group, such as in the <i>Teaching Methods and Curriculum Development</i> course. All students should working in group and as a member to present one part of their team work. Teacher will evaluate students' performance according to the quality of team work (5%).
	<ul style="list-style-type: none"> Microteaching. Teacher and student observe a live version class from the reserved primary school teacher in the microteaching classroom. University teacher, student and school subject teacher have some interactivities during this process. Some time, student teacher can prepare and give a lesson in Microteaching room, school teacher and university teacher will co-evaluate his/her performances. (5%-10%). Invite outstanding primary teachers come to university classes to give a lectures about how to teach in classroom and to be a good teacher (3-5%). 	<ul style="list-style-type: none"> Microteaching. This method is used to language class teaching. (5%-10%) School pupils come to university classes with their teachers and present their project work as well as meet and talk with future teachers. (3%) School teachers come to university class to answer questions which prepared by university students (2%).
	<ul style="list-style-type: none"> Experimental practice in sciences. Student teachers who's major in Physics and Chemistry, need doing experimental in lab. Teacher will give a demonstration, and then student can practice in the lab. (5%, it depends on the major subjects). 	<ul style="list-style-type: none"> Teaching Experimental Sciences In lab, teacher explains the aim of the experiment and gives some questions. Students work in group to develop an experiment that they can use as teachers... for example, to observe a soybean sprouting and think about questions. In the end of the

		class, teacher will ask student questions and summarize the experiment (5%, it depends on the major subjects).
	<ul style="list-style-type: none"> Classroom practice - Handwriting skills, Oral training (Mandarin) Students need practice in class when teacher teaching handwriting or oral explanation skills. (5%) 	<ul style="list-style-type: none"> Classroom practice: students working in group to prepare or share their works in Classroom, such as the Musical and Visual course (5%).

From *Table 20*, we can know that both Chinese and Catalan primary teacher education programs were designed multiple methods to teacher future primary teachers. They have same methods such as lecture, microteaching, and school teacher's participants in the university class, as well as experimental classes and handworks in a classroom. What's more, the lecture is one of the main form in most classes teaching of both Chinese and Catalan programs.

However, there are some differences in special teaching methods and main teaching form. There are more interactions between teacher and student and teamwork in Catalan classes than the Chinese one. For instance, Catalan lectures are organized by teacher's questions and students also post their questions frequently. While Chinese lectures are mainly presented by the teacher which is lack of questions that are posted by students. According to the interview, educators said that Chinese students were shy to ask and answer questions in class because they were afraid of making mistakes. What's more, the Chinese universities provide textbooks to teachers and students which Catalan university didn't provide unified teaching and learning textbooks. But the Catalan university provides an online system where a teacher can share learning materials to students. Furthermore, the Catalan class emphasizes training student team work, communication, and critical thinking through group discussion/presentation and projects (45% of teaching forms). While Chinese classes show more individual learning

and competitive environment, and university (SWU) provides lots of resources for individual/self-study to student teachers. Last but not least one, according to the analysis of three programs, it knows that all these three programs required future teacher possess key competence in using ICT as learning, communicative and collaborative tool in educational contexts.

5.3.2.3 Practices (Internship)

The Chinese programs (SWU and ZNU) established stable cooperative local educational authorities and schools which address on training students acquiring key competencies for their professional skills and attitudes development which includes classroom teaching, classroom management, educational researching, as well as school administration (community) work and teacher attitudes. However, as the training programs different, SWU and ZNU have different internship modules.

In SWU, the practice module of teacher education program is relative flexible which is designed and implemented by each faculty to meet the basic requirements in university guideline. According to the basic guideline, each student should accomplish at least 16 weeks school practice with 16 credits in teaching, classroom management and other educational works in primary and secondary schools. However, in practice level, there are three typical internships Volunteer Teaching Internship, Mixed-team Internship and Specialty-focused Internship which are focusing on training students practice knowledge, skills, emotional and attitude into real school environments. The volunteer teaching internship selects senior (3rd year) pre-service student teacher and sends to school as full-time teachers at weaker schools in low economic areas' schools. The mixed-team internship refers to teams of twenty more students with different

majors practicing in the same school with the guidance of university instructors and advisers in site school (Chen, 2013). Finally, the specialty-focused internship refers to pre-service students grouped by specialty (subjects) and organized by their school within the university to go to internship-sit primary and secondary schools. This internship is Chinese traditional teaching internship model which had about 55% students comparing in all SWU per-service student. Except the above-motioed ways, each faculty can design their own practice activities for first and second year's student, such as classroom observation or invite a school teaching coming into university classroom to give a lecture. Although there are different forms of internships in SWU, according to university requirements, all these three typical practices required to students fully participate in all the processes of teaching and school work to integrate them into the management of their site school's teaching and activities which enables students to learn how to teach and familiar with primary and secondary curriculum standards and materials. Last but not least, SWU and each teacher education faculty organize lots of student competitions in discourse (lecture) to promote the development of students' teaching skills. Outstanding finalists are nominated to participate in a national competition.

The ZNU primary teacher education practice model is unified and undertake by education faculty. This practice model is implemented by four years with different forms, such as classroom observation, imitate teaching, part-time internship and full-time teaching practice. In the second semester of the first year, students are organized to observe in a classroom on Thursday afternoon every two weeks. And the second year, after student learn the relative courses of teaching and pedagogy, they are required to do model teaching and practice half day in primary school in every two weeks through the whole year. The third year, students need to accomplish co-teaching a subject with the

school teacher one day in every two weeks through the whole academic year. Finally, the fourth year, per-service student teachers are required to full time teaching for 3 months in primary school as a subject teacher. All these internships occupy 25 credits which include 7.5 credits of university practice in subjects and curriculum researching, case study in pedagogy and designing a lesson, and speaking a lesson, and the other 17.5 credits of school practice in classroom teaching, researching of teaching content, guiding pupils writing, thesis writing based on school teaching experience. Besides the formal practice courses, education faculty also organizes some classroom teaching competitions for improving students teaching skills.

The UAB primary teacher education practice model is undertaken by education faculty with five types of practice courses from the second year to the fourth year with different practice hours, credits and training aims. According to the UAB primary teacher education program, Practicum I is started at the second year and students should practice 8-9 full weeks (70 hours which 60 is in school) with 6 ECTs. It aims to make student know about primary school and it related to environment and community. Students are required to visit a school in a group for observation of each cycle of the primary classes in three fundamental aspects: the school 'social environment, organization and classroom life. This internship is tutored by university teachers from the department of social and pedagogy after students completed the course of "social context and school management".

The Practicum II and III are opened in the third year with 12 ECTs and 2ECTs separately. The Practicum II is through the whole third year and carried out intensively for a period of seven weeks, thereby increasing immersion student at the school which is responsibly by educators from departments of psychology, teaching of languages and

mathematics education. The Practicum III is opened for one semester to provide the student general views and required the student to practice teaching one topic in a classroom. While Practicum II aims to make student deep understand and familiar with classroom, pupils, and teaching in Mathematics, Languages. Student practice in school and learn about the curriculum and subjects, and they should prepare reflections on teaching practice from systematic observation and analysis and interview as a professional and direct their thoughts from their performance, which will be proportional to the duration of the placement. Thus, it will train key competencies of analyzing and reflecting on the teaching and learning of instrumental subjects, and difficulties presented in the classroom.

The Practicum IV and V state at the fourth academic year which required 206 hours practice with 12 ECTs of each one. The only difference is Practicum V provides more specific practice such as in music, PE, and special education. Students can choose both of them or repeat the Practicum IV. According to the practice program, the Practicum IV aims to make future teacher learning to design and implement a teaching sequence with 6-8 sessions. This practice aims to train student's key competencies of planning, teaching and evaluating the teaching sequence linked to one or more knowledge of the primary education curriculum, as well as classroom management competencies and social emotional competencies. It is evaluated by both university supervisors and school mentors.

Comparing the practices course designing among this three teacher education programs, it can know that all of them use multiform and flexible methods for preparing the future teacher practical competencies in classroom teaching, management, and working in research projects and with colleagues of the school community. While there

is an obvious difference about the credits percentages of practice courses that Chinese programs take a relative less (under 17%) than Catalan program does (21.8%). But, except the formal practice courses, Chinese universities provides lots of informal ways to improve student teaching skills such as Students Teaching Competitions. Another difference among these three programs is that the internships are not unitized by SWU which gives more space to each faculty to choose their practices forms, but ZNU and UAB practices are unified with clear training aims in each practices course in different training years.

5.3.2.4 How to evaluate these competencies in these three programs?

Evaluation is an important element in the whole training process, which is directly linked with courses designing, teaching methods and provide a tool to check whether students have possessed the required competencies. According to the interview data analysis and three programs documents analysis, it found that both Chinese and Catalan program designers provided diverse methods to evaluate students learning outcomes during the whole training process. Although different majors, courses, and teachers used different evaluation methods, there are some common methods used evaluation in the university classroom courses and school practices (internships) which are summarized in *Table 21*.

Table 21.

Summary of the evaluation methods in Chinese and Catalan primary teacher education

	China	Catalonia
Evaluation Methods in University	<ul style="list-style-type: none"> • Basically, the compulsory courses are required to use exams to evaluate student learning outcomes, which include paper 	<ul style="list-style-type: none"> • Teachers have right to decide whether or not to using an exams to evaluate student individual learning

Classroom Courses	<p>test, oral test (Collage English) and physical fitness test (Collage Physic) and so all.</p> <ul style="list-style-type: none"> • Some of them are evaluate by student´s works, such as handwriting skills and thesis. • In Chinese programs, teachers have no right to decide whether using an exam which university decided. • In most courses, student final course mark is structured by 70% of examination + 10% of attending to class + 20% performance in class and homework evaluate student. But it also depended by teachers. • Portfolio and cases study reports in some teaching courses. • If a student fails in the exam, he or she need retake the exam. Sometimes it required to retake the course. • In the academic year evaluation, it includes courses marks and other credits from student´s participated activities, such as annual university sport games, the competition of speaking a lecture, as some social practice. • University and faculty provide different of rewards to encourage student learning hard. Generally, Students can get three kinds of rewards according his or her credit ranking in faculty (top 5%, top 15% and top 30%). Some outstanding students can be reward national scholarship. 	<p>outcomes. (If a student fails in the exam, he or she need retake the exam)</p> <ul style="list-style-type: none"> • Additionally, teacher evaluates the students´ performance in classroom, homework, project and group discussions also important methods. • Work seminar and all the practice activities (at least 80% of the seminars must be attended). • Group assessment (group presentation, Group-work and reports). • Critical reading of a text, seminars and problem solving in large group are also used by assessment student learning in teaching process. • Peer evaluation which means students evaluate them homework by each other. Such as <i>Mathematics for Teachers</i>, the teacher asks students to assess their home works by each other. • Portfolio and essay • University provides scholarship to outstanding student according to students ´academic achievement.
Evaluation Methods in School Practices	<p>SWU program: University tutors mainly responsibly to evaluate students practice with reference school tutors ´comments in four aspects: 1. Attitude and practice attendance</p>	<p>The Practicum I: Final report (45%), Tutorials, Seminars and public presentations (25%), report form (30%).</p>

	<p>2. Teaching practice (writing teaching plans, teaching a subject, lecture PPT, Video and teaching reflective reports) (1 and 2 take totally 60%);</p> <p>3. Main teacher work in classroom management (working plan, records, holding classroom meetings with different topics, student case research, and education events records) (it takes 30%);</p> <p>4. Basic educational survey and activities (it takes 10%).</p> <p style="text-align: center;">ZNU program:</p> <p>School tutor (70%) and university tutors (30%) co-evaluate students practice in three aspects: Teaching (40%), Classroom management (30%), Educational Researching in school (30%).</p>	<p>The Practicum II: Learning portfolio (40%), Attend in the center (30%), Seminars and tutorials/Individual or collective (30%).</p> <p>The Practicum III: Presentation of Work (40%), Practice testing (60%).</p> <p>The Practicum III/V: Portfolio (40%), Internship report (30%), Individual or collective conferences (30%)</p>
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From Table 21, there are two main parts which are about evaluation methods used in university courses and school internships. In university courses, it can know that both Chinese and Catalan courses used examination as one method to evaluate student learning results. However, the difference is that Catalan teachers have rights to decide whether to use the exams or not; while Chinese teacher has no right to decide when to use or not the exam to evaluate students because exam is a required method in most compulsory courses according to the university rules. Additionally, classroom attendance and performance are considered as two evaluation methods in both Chinese and Catalan programs. Moreover, Catalan teacher used more flexible methods to assess student teams work abilities, such as performance in group-discussion, group presentation, and the peer evaluation on their homework. In school internships, both Chinese and Catalan programs evaluate student by school tutors and university tutors. The main difference is that different Chinese programs give different weight to tutors from school and university, which SWU give more right to university but ZNU give more weight to schools. Moreover Chinese practices highlight to evaluate student competencies in teaching, classroom management, and research. While Catalan program

addresses more broad key competencies of student teachers, for instance, competencies of communication, cooperation, as well as teaching and classroom management.

5.3.3 A summary of the main similarities and differences in these three programs

Finally, there is a summary of the main similarities and differences of above-mentioned elements in these three programs of primary teacher preparation between China and Catalonia. This comparing summary includes key competencies, curriculums, teaching recourses and methods, internships and evaluation.

From Table 22, it can see that Chinese and Catalan primary teacher education programs designed diverse course, internships, teaching and evaluating methods for training and improving future teacher key competencies in knowledge, skills, and attitudes. While, they emphasize training different content by different courses designing from Chinese and Catalan programs.

Table 22.

A Summary of the main similarities and differences among these three programs of Chinese and Catalan teacher education

Topics	Similarities	Differences	
		China	Catatonia
Key Competencies	Both Chinese and Catalan programs are training key competencies in eight categories in professional level (knowledge, pedagogy, assessment, classroom management) and	Generally, Chinese programs emphasize training students' key competences in teaching a subject, classroom management, conducting a research in teaching content or students and professional attitudes and ethic. Additionally, they also address on general competencies training.	Basically, Catalan program emphasizes training students' key competences in cross-subject teaching, supporting diverse student learning, and highlight inclusive teaching as well as cross-culture and multilingual education in primary education. Also, it addresses on training students communicative and

	individual level (social and emotional competencies, communication, culture and cross-culture, as well as attitudes and ethic)		collaborative competencies.
Training models	<p>Four years course training program.</p> <p>Both Chinese and Catalan programs include subject mattered course, psychological and pedagogical courses, and internships.</p>	<p>The general education courses are compulsory for all of teacher education program in first academic year which take 21.1%-26.25% credits in total.</p> <p>Professional training courses are mainly opened from the second academic years, but some general theoretical courses also provided in the second semester of first years.</p> <p>SWU programs highlight on training specialized teacher for teaching a certain subject. So it designed around 40% credits course in subject areas. But ZNU program addresses on training teachers in cross-subjects teaching (Social area subjects or Science area subjects).</p> <p>Comparing with Catalan program, internships take fewer percentages in total credits of Chinese programs like under 17%. But there is more practices opportunity, such as 7 basic skills training course, teaching competitions, and teaching models and self-study resources center.</p>	<p>In the first academic year, it mainly provides general theoretical courses in <i>Education and Educational Contexts, Society, Science and Culture, Educational Communication...</i></p> <p>The second and third years training courses are focusing in didactics in each subject, <i>Learning and Development, Differences and Inclusion, Management and Innovation...</i></p> <p>Catalan program was designed for training cross-subject teachers in Catalan, Spanish, and Mathematics, Natural and Social subjects. It is also for training teacher to teach in a certain subject, such as, <i>Foreign Languages, Physical Education, Musical Education, and Specific Education Needs.</i></p> <p>All student teachers should accomplish 60 CETS in each year (totally 240 CETS), which 210 CETS is required by Spanish government and 30 CETS optional course designed by university. Internship takes 50 ECTS (20.8%).</p>

Teaching Resources and Methods	<p>The similar teaching methods are lecture, microteaching, and school teacher's participants in university class teaching, as well as experimental classes and handworks in classroom.</p>	<p>One teacher teaches one course.</p> <p>University provides unified teaching and learning textbooks in general education courses to teacher and students. And faculties provide unified textbooks for subject matter courses and professional development courses.</p> <p>Lecture takes about 70% teaching forms in Chinese classroom, and there is less interactivities between student and teachers.</p> <p>Microteaching is other typical methods in SWU courses, there are several bog microteaching classrooms provided by teacher education faculty. It is common for practice student teaching skills and learning in real class before the student start their internships. But it is not the main teaching form.</p>	<p>According to the course's needs, more than one teacher can teach same in one course.</p> <p>There is no unified teaching textbook.</p> <p>Teacher has right to choose teaching content according to department designed teaching plan. And teachers will share their teaching handouts and reading materials to each student through university provided online system.</p> <p>Lecture take about 50% teaching forms in Catalan courses and teachers guide student learning through asking questions. There are relative more interactivities between students and teachers in classroom.</p> <p>Another typical method is student group work (discussion and presentation) takes nearly 40% in all teaching forms.</p>
Internships	<p>In this part, both Chinese and Catalan program provide diverse and flexible ways for preparing the future teacher key competencies in school works.</p>	<p>Chinese program designing internship emphasize training students competencies in teaching a subject, classroom management, conducting a research in teaching content or students and professional as well as professional attitudes and ethic.</p> <p>SWU internship provides three main forms to all students, such as, Volunteer Teaching Internship, Mixed-team Internship and Specialty-focused Internship. Beside these types, each faculty can design classroom observation and other forms of internships.</p> <p>ZNU implemented internship from first year to fourth years which include classroom observation, imitate teaching, part-time internship and full time teaching practice.</p>	<p>UAB internships include five types of practice courses from second year to the fourth year with different practice hours, credits and training aims.</p> <p>Each internship courses are responsible by different faculties.</p> <p>The Practicum I take 6ECTS started in the second year, which aims to let students know about primary school and school related educational organizations. The Practicum II and III are opened at the third year with 12 ECTs and 2ECTs separately, which aim to provide student practices opportunities of familiar with classroom, subject teaching and pupils. The Practicum IV and V state at the fourth academic year which required 206 hours practice with 12 ECTs of each one.</p>
Evaluation	<p>Among these three programs, educators</p>	<p>In China, the most common evaluative method is examination</p>	<p>Teacher can decide to use which kinds of evaluation, for instance,</p>

<p>methods</p>	<p>use same evaluative methods, such as examination, student's works (homework and portfolio), as well as the rate of student attending to classroom, and their classroom performances.</p> <p>Students can retake the exam, if they fail in the first time.</p>	<p>by paper test which decide by university and faculty. Teachers have no right to decide whether or not to use paper test exam.</p> <p>Basically, university teachers evaluate a student achievement in her/his subject through 70% of exam mark + 10% of attending to classes + 20% student's classroom performance and home works.</p> <p>Additionally, the evaluation of students' performance is co-evaluation method by tutors from university and practice school. SWU emphasize the opinions of university teachers, while ZNU address school tutor's evaluation.</p> <p>University and faculty use another way to evaluate students, such as marks of courses (80%) + activities participation (20%). And they provide different kinds of scholarships to top 30% students for encouraging student study hard.</p>	<p>whether or not using examination.</p> <p>Student's performances in classroom are an importance evaluation part, which includes questions asking, and answering, discussion in group, presentations and conference.</p> <p>Critical reading, problem solving, peer evaluation also is used in student learning evaluation.</p> <p>Additionally, different of Practicum courses are used different evaluate methods for assessment student performances.</p> <p>University provides scholarships for supporting outstanding students in academic study.</p>
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Moreover, the Chinese programs provide the general education course to training broad knowledge to the first year students. And the SWU program aims to train the future teacher as a specialist in his/her subject through deep professional subject knowledge training. Therefore, different subject teachers are trained by different faculties at SWU. While the ZNU program stressed on training general teacher who is enabled to teach cross-subjects in arts or science areas. Catalan program aims to train cross-subjects teacher with the key competences in language and communication, mathematical and digital skills, social and science cross-subject teaching, as well as culture, inclusive and civil education for primary school. Practical skills are mainly trained by internships and activities in both Chinese and Catalan programs. Teachers' attitudes, values and ethic are trained by both Chinese and Catalan programs, the only

difference is that Chinese program design certain teacher education course special to training them and evaluated by educators in internships, while Catalan program did not design the teacher ethics course. But program designer thinks students will develop their attitudes and values through four years learning and practice in school. As these differences, Chinese and Catalan programs used different teaching and evaluation methods in both university course and school practices.

5.4 Discussion and conclusion

This investigation reveals that the common key competencies are trained by both Chinese and Catalan teacher education programs with the aim of “well-qualified teachers” for servicing in school and social context. However, as the culture and educational systems differ, so does the content among the eight major categories of teacher competencies, training and evaluating methodologies in Chinese and Catalan programs. We will mainly discuss the differences in the training process of key competencies in Chinese and Catalan teacher education programs, and why they are different, through a cross-culture perspective.

About the knowledge training for first-year students, Chinese programs attach importance to general knowledge in several fields: English, Physics, ICT, Philosophy, Cultivation of Ideological Morality, Chinese history, and Undergraduate career development guides etc. But the Catalan program address basic educational knowledge in social contexts and human development as well as teacher knowledge, such as *Education and educational contexts*, *Contemporary Theories and Practices in Education*, as well as *Society, Science and Culture and Mathematics for teachers*. The

difference is probably related to the teacher education policies and school system. According to the policy of Chinese teacher education standards (2011), general education is an essential part in high education which aims to extend student's breadth of knowledge and build basic skills and attitudes of lifelong learning (Jia, 2015). The Spanish and Catalan educational systems require that a primary teacher should teach cross-subjects in social and science subjects as well as mathematics and native language (BOE, 2007). There is no requirement for a general education course in primary teacher education. Moreover, as the education movement in the 1980s, it gave more space to the sociology of education, which aimed to develop responsible citizenship and social equalities for students and make them aware of the "right to education" through teacher education (Marhuenda & Bolívar, 2012). Thus, the Catalan program provides general courses which are more focused on providing students with knowledge about primary education-related environments.

Moreover, knowledge of subject matter, curriculum, and pedagogical (content) knowledge are of importance to future teachers (Cator, Schneider & Ark, 2014; Darling-Hammond, 2005). Both Chinese and Catalan programs highlighted them, but attached importance to different aspects with different training goals and courses. The SWU programs emphasized training deeper subject knowledge and pedagogical (content) knowledge in a certain discipline with the aim of training each student teacher as an expert in his/her subject (Chen, Yang & Li, 2013). Thus, many professional courses are provided for second and third year students in the SWU program to help development of their deeper learning in their fields. However, both ZNU and UAB programs highlight training students' key competencies in teaching cross-subjects. This difference is not only related to the education system, but also connected with the achievement of teacher education goal, which should involve training for specialized teachers or general

teachers. In China, numerous school employers like to choose teacher candidates from the specialized programs, because they are supposed to acquire more specialized knowledge and skills which will be of benefit in helping students deeper learning and improving students' academic achievements (Darling-Hammond, 2005; Jensen & Nickelsen, 2008; Yang, 2009; Zhang, 2012). And according to some studies of curriculum (Darling-Hammond, 2005; Grossman, Schoenfeld & Lee, 2005), which was found that an effective class is related with the teacher's content-related understanding, which goes beyond mastery of the subject content, and beyond common sense pedagogy, and deserves serious and sustained attention teacher education. Nevertheless, there are some Chinese researchers who pointed out that pupils need a cross-subjects teacher to stay more time in order to help whole development instead of only focusing on teaching subjects (Huang, 2009; Yang, 2009; Zhou, Li, Deng & Xue, 2007). However, the specialized training module is directly matched with current Chinese primary and secondary school systems, because they are organized by subject and one teacher teaches one subject. On the other hand, the Catalan primary teacher education program involves training for cross-subjects teacher since the Catalan primary education system required that primary teachers possess key competencies for teaching more than one subject (BOE, 2007).

Furthermore, Catalan programs pay more attention to training teachers for inclusion and diversity, teaching multi-language and multi-culture, and using ICT. This is consistent with the results of research by Caena (2014), Chiner and Cardona (2013), Muñoz (2000) as well as Pujolar, (2010) and Parrilla (2008), which illustrated the importance of inclusion, multi-language, diversity and ICT for teacher education in Spain and Catalonia. However, the Chinese program sets special education courses as a specialized training for special teachers and multi-language teaching courses for training

minority area teachers (Ding, 2006; Zhang 2004; Wu & Zhang, 2016; Wang, 2016). This difference is probably related to the education system, because Chinese special education schools are separated from normal primary schools, but Catalan primary schools are inclusive schools (Tan, 2014). Moreover, because of the culture difference, Catalonia has lots of different immigrants, so the Catalan government highlights the education of immigrant' children (Pujolar, 2010). But China is a country with high integration of 56 ethnic minorities, so current teacher education is mainly focusing on improving the quality of all minorities through specialized teacher training approach (Teacher, 2011& 2012). Therefore, the Chinese teacher education programs focus on teacher specialized, whereas the Catalan primary teacher education program is full-training for a variety of disciplines.

In addition, the Catalan program highlights training key teacher competencies of communication through a higher proportion of credits in the program, which Chinese program includes relative less. This communication competence is related with teachers' social and emotional competences, which are considered essential for training the pre-service teachers (Jennings & Greenberg, 2009, Jennings, et al., 2014). In the Catalan teacher education program, these competencies are trained and practiced through group work, such as group discussion, presentation, conference etc. During this process, the student is the center of classroom activities, and the educator plays a supervisory and evaluative role to guide and support students group work. Thus, students have more opportunity to develop their competencies of communication, cooperation, as well as social-emotional competence. Although these competences are also required for Chinese student teachers, they are mainly developed by internships, a series of activities, some of which are mixed in with some psychology courses. Moreover, the communicative and social-emotional competences, as well as assessment

and classroom management competencies, are mainly learned and improved in school practices (internships). Both the Chinese and Catalan programs designed diverse internship courses to convert the theoretical knowledge into a real work environment. And from the training program, it became clear that ZNU and UAB programs designed some well-connected courses between the university and school practices. As Zeichner's (2010) research showed, the more connected course designs are between university-based training and school internships, the better prepared future teacher will be in enacting complex teaching practices.

The teaching and evaluation methods are related and are essential parts for teacher education (Adamson, 2012; Caena, 2014; Darling-Hammond, 2005). There are further differences in Chinese and Catalan programs: for instance, Catalan educators applied more question and problem-solving strategies in a classroom for helping student developing their critical thinking and creative abilities. The program designer believes that teachers not only impart knowledge, but guide student in how to think, express and reflect on what they know, why they need to know, and how to know, while Chinese university courses lack critical thinking and questions in the classroom, because most theoretical courses are organized through a teacher-centered approach. However, Chinese university provides a course called problem-solving specially aimed at training student competencies. Also, Catalan program requires training teacher professional attitude and ethic competencies as transversal competencies in the training process, whereas Chinese programs design specific course called Teacher Ethic for developing student's competencies in attitudes, ethics and values. Moreover, teaching methods are related to evaluation methods: the Chinese university applies more examination for testing student knowledge, but Catalan educators use more classroom performance and group work to evaluate students' competencies. However, Chinese universities designed

a variety of internship evaluation methods for assessing key competencies in teaching, classroom management, researching, and attitudes.

As an overview of comparing Chinese and Catalan primary teacher education programs, there are five main conclusions:

1. Eight principal categories of key competences are trained by both Chinese and Catalan programs in different degrees, emphasis and methods.
2. Chinese primary teacher education programs are more specialized in training different key teacher competencies in different disciplines, whereas Catalan program is more general in training teachers' key competencies in cross-subjects and inclusive education.
3. Chinese programs address broad knowledge training in different fields as a general education for all first-year student teachers, while Catalan program focuses more on providing knowledge in education and education contexts, citizen education, as well as social and human rights.
4. We can see China programs are not unified in training forms and modules which show more flexibility in course design and credits for different programs. In contrast, the Catalan program is unified by the Spanish government in training curriculums and credits. However, in teaching resources, the Catalan university does not provide unified textbooks, which gives more space to educators to choose teaching content, but the Chinese university provides unified textbooks as main reference for teaching and learning.
5. Both Chinese and Catalan programs are supposed to train theoretical knowledge and basic skills for future teachers through university courses, but most of the

skills in pedagogical and classroom management, as well as interpersonal competences are developed by internships.

5.5 Recommendations

The aim of this study is to provide a useful perspective for policymakers and program designers that can be applied to reflect whether a program is on the right track toward its original goals and what modifications are needed to counter any diversion from the original direction, and learn from each other programs between China and Catalonia. The following is a recommendation for policymakers and program designers:

1. It could be of benefit for improving student creative ability if Chinese universities can design more learner-centered teaching methods, using appropriate methods to guide and encourage student asking questions. Thus, students will develop their independent thinking and critical thinking ability, which could be a step towards developing Chinese student creative ability.
2. In order to train future world teachers for improving social justices and equality, more attention should paid to designing courses of multi-culture and multi-language education as well as inclusive and social citizen education in Chinese primary teacher education programs.
3. More flexible and diverse programs should be provided for primary teacher education in Catalonia. It could be of benefit for improving future student academic achievement and educational quality, if more specialized teachers and cross-subjects teachers can be trained and supplied to different grades of primary

classes. Specialized teachers are more professional in their subject area and can make more systematic plans for student learning, thus providing a better connection between primary education and secondary education.

4. Governments should consider providing more opportunity and making a balance on employment cross-subjects teachers and specialized subject teachers for both pupils' mental development and learning.

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V. Final Conclusions

Reflecting the research aims, our studies provided the data-based evidence for answering question of “whether there is a set of competencies that can be considered as key cross countries that differ in culture and perspective” (OECD, 2005, 2010). Even more, it also pointed out which factors should be consider when comparing the key teacher competencies through a cross-culture perspective.

Considering the results of both Studies (Study I and Study II), we summarized ten points as the final conclusions.

1. On one hand, it shows that some key competencies existed in cross-culture context, for instant, both two groups of teachers considered the pedagogy competency, the classroom management competency, and social, emotional and communication competencies as the key competencies cross Chinese and Catalan culture. In the meanwhile, assessment competence is considered less important by both group teachers.

2. On the other hand, it exist a significant difference on the value of the competency of curriculum and subject related knowledge, and the competency of learning to learn which considered by Chinese and Catalan teachers. Such as, in Chinese context, teacher valued more knowledge competency than the competency of learning to learn, whereas in Spain, the Catalan teachers hold an opposite opinion.

3. However, as the cultural and educational contexts differ, these two groups of teachers reported that they valued different strategies in key competencies application. For instance, when mentioned about pedagogical competency, Chinese teachers considered the skills of lesson planning with pedagogical content knowledge and physical knowledge and researching on teaching content are important. While the

Catalan teachers valued on the skills of ICT using in didactic, organizing students solving problem in a team, and inclusive teaching.

4. Moreover, as Chinese reported that they bared a hug stress in their working, so that they considered emotional competency were very important for them, whereas the Catalan teachers considered the communication competency was more important for them, because they reported that they need communicate and cooperate well with parents.

5. The differences of the perspectives of Chinese and Catalan primary school teachers on the value of each key competency is deeply inflected by their education systems, school organization, classroom size, and educational culture context in both sides. For instance, how are the curriculums taught in primary schools (the specialized subject teachers or cross-subject teachers; teacher-centered or student-centered), what are the education forms (inclusion or no-inclusion), what is the foundational theory of teaching and learning (constructivism), whether the standard test are valued by parents (highly valued by Chinese parents; lower valued by Catalan parents).

6. In China, primary students are taught by different subject teachers and curriculum is equaled with textbook. Therefore, each teacher is required to have very good professional knowledge in his or her teaching subject. As a result, teachers pay more attention to preparing teaching content and conducting a lesson as well as correcting student home works.

7. While, Catalan system requires one primary teacher teaches cross-subjects and implements inclusive education in every primary school, so that teacher should stay more long time with pupils and more familiar with his or her students learning situation.

Thus, methods related competencies are very important for Catalan teachers, because they need handle out with diverse student and teaching content.

8. Additionally, the education systems and teacher related policies are also influenced the pre-service teacher key competencies training in Chinese and Catalan teacher education programs. Since there is no set format for primary teacher education, the Chinese primary teachers are trained by the multiple channels. Whereas, the Catalan primary teacher education program is unified by the Spanish government in the curriculums and the credits.

9. Generally speaking, Chinese primary teacher education highlights training key competencies of abroad knowledge, and specific subject knowledge and teaching skills, as well as researching skills and professional attitudes and ethics for the future teacher. Thus, the Chinese universities designed a lot of general education courses, specific subject training curriculum and teacher professional curriculums. However, the teaching and evaluation methods are used in the teacher-centered approach by educators which need to be improved.

10. The Catalan primary teacher education emphasizes on training competent teacher to teach cross-subjects in language, mathematics, science and digital, culture and social citizen etc. Thus, the educators can flexibly choose teaching contents and methods for teaching and evaluating through the learner-centered forms. However, the government should provide multiple channels to training for both of cross-subjects teachers and specific subject teachers for helping student deeper learning and improving the educational quality.

VI. Applications for research, policies and practices

Based on a deep analysis and comparison of these two different culture contexts, education systems, this research project conducted two comparative studies on Chinese and Catalan in-service teacher key competencies and pre-service teachers training process. Our findings could provide some benefits for the future applications in some areas: research, policies and practices.

7.1 Applications for research

Our findings have provided the data-based evidence of that a set of competencies that can be considered as key across culture context. Specifically, the future researches can compare the key teacher competencies of pedagogy, classroom management, assessment, as well as social emotion and communication with considering of the education systems, the teacher related policies and social culture context.

Moreover, one of our main finding shows that classroom size could be an important factor while could influence Chinese and Catalan primary teacher's opinions on which competencies are important for their school working. Therefore, the future studies can consider the classroom size in their research designing when comparing teacher competencies.

Furthermore, a basic theoretical framework should be built when compare the teacher competencies cross countries. Our theoretical framework could be useful for future comparative studies on Chinese and EU teacher competencies. Because, our theoretical framework were developed based on the EU teacher competence theoretical framework with considering of Chinese and Catalan educational policies of teacher competencies and skills standards.

Finally, these two studies provided some basic context validity evidence of future teacher assessment and international teacher comparing research, such as, the TALIS research and the PISA research.

7.2 Applications for policies

The future international cooperation on teachers should pay more attention on the difference of culture context and education systems.

Chinese educational policymakers could emphasis on the role of constructivism in educational practices, which can provide more learner-centered teaching and learning approaches in classroom. University program designers should also consider how to train the future teacher with the perspective of constructivism and as a lifelong learner to be benefit for their teaching practices.

Moreover, the Chinese education system should consider about systematically develop a series of policies for supporting building a Competency-Based System in primary schools, teacher evaluation, and university teacher training programs.

Catalan educational policymakers could consider about provide multiple channels to training for both of cross-subjects teachers and specific subject teachers for different stage of pupils. Such as, for the 11-12 years old student, the more specialized subject teacher could help student's deeper learning in each subject, which can help student much easier in transition of primary and secondary learning, evermore improving their student academic assessment and educational quality.

7.3 Applications for practices

In China, the school leaders should provide more training opportunity for improving each subject teacher's the learner-centered teaching methodology. Moreover, teacher should consider how to inspired student thinking and encourage student to ask questions during their teaching process. These suggestions could provide a new perspective for improving Chinese students' creative ability and independent thinking ability.

In Catalanian, the primary school leaders should provide more supporting of teachers' competencies of lesson planning and research on teaching content, because an effective class should not only pay attention on teaching methods but also should address on the teaching content. As Zeichner (2005) pointed out the enacting educational goals requires strong knowledge of instructional design and curriculum planning.

Based on the social culture context, education system, and polices analysis, it will be helpful for understanding Chinese and Catalan primary teacher competencies and their training programs. It builds a bridge for future cooperation of teacher competence training and provides a possibility for launching some educational research projects.

VII.Future studies and lines of research

One of our main aims was to explore the similarities and differences on key teacher competencies between Chinese and Catalan in-service primary teachers (Study I). Another aim was to explore the similarities and differences in pre-service primary teacher training programs (Study II). Based on our findings, we suggest that the future research could take forward the analysis of more specific text revision characteristics of each side teacher valued key competencies, or could focus on specific aspects which are limited in these two studies in the following points:

Study I

1. Expanding the research sample and make a balance between Chinese and Catalan samples.
2. Designing a control group to deal with the mixed effect on teacher key competencies by the culture and classroom size.
3. Adding the structured classroom observation to provide multiple pieces of evidences for comparing the similarity and difference.
4. Developing a cross-culture teacher key competencies assessment tool for deeper comparing the level in each key competencies.
5. Measuring how much degree did teacher's key competencies impacts on student competence development.
6. Especially analysis on how key competencies are developed during different professional stages and which factors influenced their development.

Study II

1. It will be much more interesting, if there are some deeper analysis on the teaching methods which were used by university educators and assessment of the internship process through classroom observation and video analysis.
2. Assessment or survey of Pre-service teachers' key competencies is also important for the future comparison.
3. How culture affects the teacher key competences and professional goals should be studied by future studies.
4. How much the influence on the teacher key competencies by the education system and policies should be considered by future studies?

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Framework on Teacher Competence (FTC)

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The Manager's Guide to the Middle School Teacher Role

<http://skills.salary.com/Job/Middle-School-Teacher>

Miniversion: The UK teacher competences and requirements

http://www.teacherqualitytoolbox.eu/teacher_quality_in_europe

Common European Principles for Teacher Competences and Qualifications

http://ec.europa.eu/education/policies/2010/doc/principles_en.pdf

Profiles of Teaching Competency

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