Chapter 8
Institutional Conditions for Exploration: Chinese Kindergarten Teachers' Perspectives and Practices

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8.1 Introduction and Background

It has been well documented in the existing literature that teachers play a significant role in the kind and quality of learning opportunities students experience (e.g. Paine & Fang, 2007). This applies to the kindergarten context. Teachers are the key personnel in determining the varieties and quality of activities kindergarteners can carry out. Adults are important mediators to motivate children's curiosity and exploration (Chak, 2002, 2010; Fleer, 2009; Murray, 2012). Through organizing different activities for kindergarteners, teachers contribute to the institutional conditions for their development. More importantly, there is a need to examine teachers' philosophical beliefs and assumptions, as well as the corresponding pedagogies that developed from these beliefs and assumptions, since teacher philosophy has a bigger impact on children's learning than their confidence to teach what they are supposed to teach (Fleer, 2009). All mentioned above provide the rationales to examine how kindergarten teachers' conceptions and practices are framed by employing cultural–historical framework and taking their perspectives and practices of children's exploration as an example. In this chapter, kindergarten means the institution that provides care and education for children aged three to six in China.

Previous research has confirmed that exploration is central to and essential for children's development and learning (Hedegaard & Chaiklin, 2005), because exploration, both indoors and outdoors, helps children build and strengthen brain pathways (Couture, De Sousa, Ferrazzi, Monosky, Papineau, & Tripathi, 2013; Robison, 2008) and facilitates their knowledge construction (Bruner, Jolly, & Sylva, 1976; Fleer, 2009). Infants spontaneously explore the world (Kretch, & Adolph, 2016), especially when what has happened is different from their expectations (Stahl &

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Feigenson, 2015), thereby developing their ability to learn (Schulz, 2012) and they can learn effectively (Bonawitz, van Schijndel, Friel, & Schulz, 2012). By the time they are in kindergarten, children are able to explore selectively (Legare, 2011; Schulz, Standing, & Bonawitz, 2008). Some researchers (e.g. Hammer & He, 2016; Hedegaard & Chaiklin, 2005) have included the concept exploration in their study as an approach for subject teaching/learning in different contexts. Nevertheless, the review of exploration-related literature for this study indicates that most research focuses on the contributions that exploration has made to child learning and development, while exploration in the ECE context is insufficiently researched or conceptualized. Neither is there much empirical research on exploration within ECE settings. The present research addresses this gap by investigating Chinese kindergarten teachers' perspectives and practices of organizing explorative activities for children through the lens of the cultural–historical framework.

Hedegaard (2002), who has extended Vygotsky's cultural–historical framework with the concepts of institutional practices and activity settings, initiated the use of the cultural–historical framework to study children's development through studying their daily activities. As such, Hedegaard and Chaiklin (2005) utilized the cultural–historical framework to research and conceptualize exploration in relation to learning of subject matter in school settings. Building on their study, the present study, anchored in cultural-historical framework (Hedegaard, 2009, 2012; Chap. 2), aims to explore the institutional conditions for kindergarteners' exploration by capturing ECE teachers' perspectives of exploration and their practices in everyday teaching related to exploration. Research should address the perspectives of those living an experience (Dockett & Perry, 2007). Here, teachers' perspective refers to teachers' conceptions of exploration and their views of conditions that influence their practices. Teachers' conception refers to their definition and views of functions of exploration in child development. Teachers' practices, in this study, refer to the exploratory activities that teachers have organized for children and their roles in them. The terms exploration and exploratory activities are used in this chapter. Exploration is an umbrella term, while explorative/exploratory activities are used to describe practices in kindergarten settings.

Government policies as a form of the social perspective, influence local practices and activities, thereby providing the rationale to look at national curriculum guidelines, relevant policies on ECE that have influenced kindergarten practices, and policies in ECE teacher education. In China, kindergarten-based curriculum builds on two national guidelines and local/regional curriculum if they have any. Kindergarten Education Guidelines implemented in 2001 is one of the two. The other one is Early Learning and Development Guidelines for Children Aged 3–6 released in 2012. In both guidelines, the word exploration appears. Among the five learning areas[1] listed in Early Learning and Development Guidelines for Children Aged 3–6, the word exploration appears 12 times under the topic of science while it does not really show up in the other four. In the most recent government policy, it is

[1] The five learning areas are health, language, social development, sciences, and art.

emphasized that children should not only be given opportunities but also be provided with materials and support by the teachers to explore (The Central Committee of the Communist Party of China and the State Council, 2018). This statement did not appear in the previous version of this policy. This updated policy also emphasizes the importance of providing children with opportunities to explore on their own.

In terms of policies for ECE teacher education, two government policies—the National Curriculum Guidelines for ECE Teacher Education and the Professional Standards of Kindergarten Teachers— are analyzed to examine how the state stipulates teacher education concerning children's exploration. In the Curriculum Guidelines, although the concept exploration is not mentioned, it is pointed out that teachers should protect children's curiosity. The six learning areas listed in the guidelines give ECE student teachers opportunities to learn how to design activities for kindergarteners (Ministry of Education of the People's Republic of China, 2011a). In the Professional Standards of Kindergarten Teachers, one of the professional standards is that teachers should provide more opportunities for children to explore, communicate, collaborate, express themselves, and display their performances to support and promote learning autonomy among kindergarteners (Ministry of Education of the People's Republic of China, 2011b). Together, these standards indicate a change in the societal perspective on how exploration has been referenced in national policies. Contemporarily, policy makers have realized the importance of exploration in child development and set norms and discourse for ECE practices nationwide.

Teacher education/training here refers to both pre-service and in-service teacher training/education. As mentioned above, all ECE pre-service teacher education programs have to refer to National Curriculum Guidelines for ECE Teacher Education and Professional Standards of Kindergarten Teachers to make their own curriculum. As such, what preservice ECE teachers are supposed to learn in pre-service teaching education should be similar. However, as there are different levels of ECE preservice teacher education (secondary vocational ECE teacher education, three-year tertiary education, and four-year university ECE teacher education), what ECE student teachers learn and the depth of the knowledge they acquire vary. Furthermore, in-service teacher education/training may also differ. According to different classifications, there are different kinds of in-service teacher education. This chapter categorizes the kinds of education/training according to their organizers: that is, trainings organized by different educational institutions and trainings organized by the kindergartens where ECE teachers work. In terms of trainings organized by organizers outside kindergartens, there are required trainings organized by the local government institutions and universities and voluntary trainings pursued by ECE teachers themselves for further study in universities. The trainings organized by kindergartens are usually tailored to the needs of the kindergarten and relevant experts are invited to do the trainings. These trainings (both pre-service and in-service) provide support but also create conflicts for teachers in their daily practices.

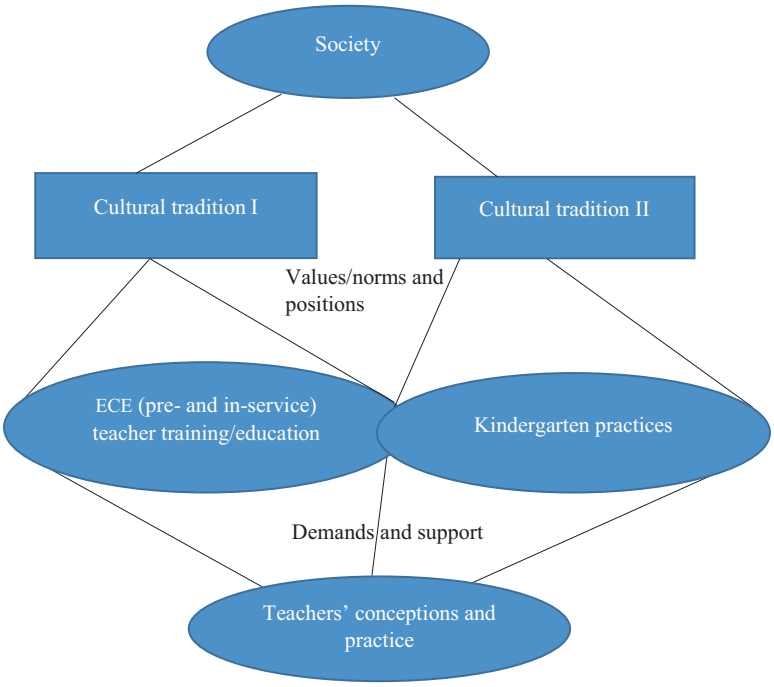

Fig. 8.1 Author's adaptation of cultural-historical framework from Hedegaard (2009)

As far as personal perspective is concerned, this chapter examines kindergarten teachers' conceptions and practices of exploration and the roles they play in children's explorative activities.

The visualized framework for this chapter is as follows in Fig. 8.1.

8.2 The Present Study

8.2.1 Research Question

As mentioned in the introduction, the major goal of present study is to understand the institutional conditions for kindergarteners' exploration through capturing ECE teachers' perspectives on how their conceptions and practices are framed in teaching related to exploration. To achieve the research goal, the following research question is asked: what are the conditions that frame teachers' conceptions and practices of children's exploration?

8.2.2 Research Sites

Data have been collected from three kindergartens located in Huining (Gansu province), Kunming (Yunnan province), and Shanghai. For confidentiality, their locations are used to identify them and distinguish them from one another. All are public and model kindergartens in their respective regions. Being public kindergartens means that they receive funding from the government, while being model kindergartens means that they are top kindergartens with exemplary practices and better resources than their regional counterparts. More importantly, as model kindergartens, they provide in-service teacher training to teachers of other regular or underdeveloped kindergartens in their regions and sometimes other parts of China. As a result, the conceptions and practices of exploration of the teachers in these kindergartens may have impact on many teachers especially in their respective regions. This makes it more significant to study the conceptions and practices of exploration in this type of kindergartens.

The three different cities are chosen primarily to support comparison and achieve the major goal of this study (i.e. how institutional conditions play a part in teachers' practices and, thus, kindergartners' exploratory activities). The regions where the three kindergartens are located are of different developmental paces and economic backgrounds that distinguish them from one another in terms of the resources provided to ECE.[2]

8.2.3 Data Collection and Participants

Data were collected in the form of documents, online open-ended questionnaires, and online interviews. Documents include "not only formal policy documents or public records but anything written or produced about the context or site" (Simons, 2009, p. 63). Documents here mainly include policies related to and curricula for ECE teacher education, ECE-related policies, curricula at different levels, introductions to the kindergartens, teachers' plans for exploratory activities, and the kindergartens' daily schedules. The documents were obtained via government and kindergarten websites, as well as interviewed principals and teachers. The information from the documents not only provided context for the research, but also "corroborated and augmented evidence from other sources" (Yin, 2003, p. 87).

Participants of the online survey were located through purposive sampling and approached through the gatekeepers - the principals of the three kindergartens, who shared the link to the online open-ended questionnaire with teachers and forwarded

[2] Every year, some agencies ranks the gross domestic product (GDP) of all cities in China and lists the first 100 cities. In 2018, Shanghai was ranked first, Kunming was in the middle (44), and Huining was not listed at all. For the list of the 100 cities, please refer to: https://m.21jingji.com/article/20180814/herald/3b6d45d964f5a0977ed36b4d9aef8725.html

Table 8.1 Information of participating teachers in each kindergarten

Location	Number of teachers in the kindergarten	Number of questionnaire participants	Teacher interviewees	ID for interviewed teachers[a]	Principal interviewees
Gansu	44	44	2	Teacher A	1
				Teacher B	
Yunnan	108	32	3	Teacher C	1
				Teacher D	
				Teacher E	
Shanghai	39	35	1	Teacher F	1
Total	191	111	6		3

[a]This is intended for the findings and discussion section when the interviews are quoted there

the researcher's WeChat[3] account to teachers to be interviewed. Qualitative surveys can generate great data, be less daunting, and serve as a very quick and cheap way to collect (lots of) data (Braun & Clarke, 2013). In total, 111 kindergarten teachers responded to the open-ended questionnaires (refer to Table 8.1 for the detailed information) from late July through early August 2018. All questionnaire responses were valid. The purposes of the study and the voluntary nature of participation were disclosed in the introduction to the questionnaire.

Based on the preliminary findings generated from the questionnaire surveys, follow-up interviews with teachers for clarification and probing were realized through WeChat. Interviews with kindergarten principals were also completed via WeChat. The interviews were conducted from mid-November 2018 to early January 2019 at convenient times for the interviewees and lasted about 20 min on average. The interviews were intended to supplement and triangulate responses from the open-ended questionnaires. Further, four of the interviewed teachers also shared their plans for exploratory activities. To understand more about teacher education/training, another follow-up interviews with the previously interviewed teachers were conducted in June 2019. This online approach was necessary given the impracticality of travelling to the respondents' locations. The responses to the questionnaires and the interviews were conducted in Chinese and were collated and translated into English during the collection process.

8.2.4 Data Analysis

Cultural–historical framework was also utilized in the data analysis process. Policies related to and national curriculum guidelines for ECE teacher education, as well as the two national ECE curriculum guidelines and related policies, were analyzed as societal perspectives to understand the directions and frames they have provided for

[3] WeChat is an internet chat tool similar to Skype but more popular in China.

ECE teacher education/training and kindergarten practices. At the institutional level, themes like available resources, local climate, and environment and kindergarten characteristics fell under the category of kindergarten practice.

The data analysis process involved several stages using different functions embedded in Excel. All the responses to open-ended questionnaire were saved in one sheet in Excel with the responses to main questions being saved in separate sheets. This process allowed both an overview and individual coding of all collected data. After that, the initial codes were refined and reorganized into themes. For example, in the coding process, teachers' definitions of exploration were coded as "doing" or "thinking" and then put into different dimensions (e.g. the cognitive dimension, the behavioral dimension and so on). All these were put into the category of institutional perspective. Additionally, constant comparative analysis (Glaser & Strauss, 1967) was used throughout the analysis process to compare and contrast the data. Constant comparisons were made among (a) responses given by teachers in the same kindergartens and (b) responses given by teachers in different kindergartens.

The frequencies of some themes were quantitatively analyzed using embedded Excel functions, such as count-if, sum, and percentage. All qualitative data can be coded quantitatively, and quantitative coding makes it possible to complete analyses that cannot be realized with qualitative analysis (Trochim, Donnelly, & Arora, 2016). Take the teachers' conception of exploration as an example. The quantified analysis made it possible to detect that the theme "cognitive dimension" appeared more often among the 111 responses than the theme "behavioral dimension". The frequency graphs were created in Excel and then copied and pasted to the findings section.

8.3 Findings and Discussion

The findings are presented in terms of teachers' conceptions and practices, and they are discussed within the cultural–historical framework.

8.3.1 Teachers' Conceptions of Children's Exploration

As mentioned above, teachers' conceptions of exploration are examined in terms of their definitions of exploration and their views of the influences of exploration on children's development.

Different from the finding of Hammer and He (2016, p 461) that "the Chinese preschool teachers' understanding of exploration seemed to be related to developing investigative skills and a scientific attitude", participating teachers in this study have defined exploration from five dimensions. In terms of cognitive dimension, exploration is seen as getting to know new knowledge, studying the unknown, a learning

process, and a problem-solving process. As far as behavioral dimension is concerned, exploration is a series of different activities, using body to get in touch with the world, children playing with and interacting with the provided artefacts. Some teachers define it in both dimensions. They say that children use both their brains and their hands to discover and solve problems. In addition to these two dimensions, some teachers say that exploration is creativity, while others view it as a spirit to discover and study the unknown. Several teachers mention that exploration is a journey of children's autonomous learning processes. According to the quantified data, more teachers defined exploration within either the cognitive dimension or both the cognitive and behavioral dimensions. Figure 8.2 illustrates the quantified data for teachers' definitions of exploration within different dimensions.

In general, the responding teachers defined exploration from similar aspects. Nevertheless, there were differences. Teachers in Gansu defined and perceived exploration from relatively narrower dimensions than teachers from Yunnan and Shanghai. To explain the similarities in teachers' definitions, I argue that societal perspective has more influence. As mentioned in the introduction, exploration gains its due attention in Early Learning and Development Guidelines for Children Aged 3–6. More than 80% of the responding teachers have the knowledge that exploration is mentioned and encouraged in the national guidelines and recognize that, of the five learning areas, only the science learning area includes the word exploration. This explains why most teachers defined it from the scientific aspect in the findings of Hammer and He (2016) and from the cognitive and behavioral perspectives in this study. Additionally, in the policy entitled Professional Standards of ECE teachers, it states that teachers should provide more opportunities for children to explore, communicate, collaborate, express themselves, and display their performances to support and promote learning autonomy among kindergarteners. This explains why some teachers define exploration from learning autonomy dimension. As far as differences are concerned, local tradition and condition may exert more influence. According to the interviewed teachers and principal in Gansu, because of the kindergarten's limited resources, it is not feasible for them to provide opportunities

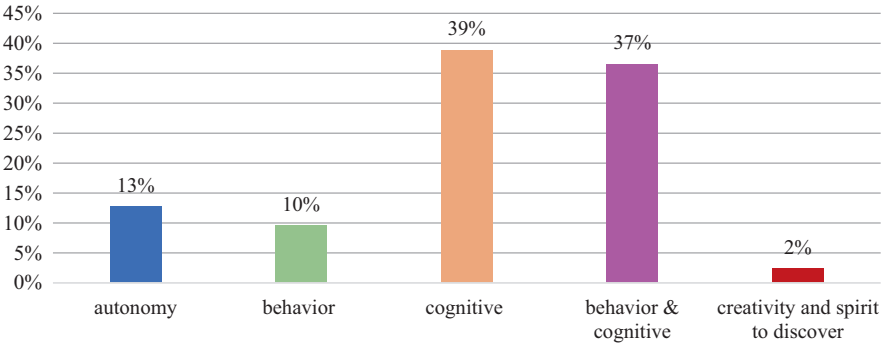

Fig. 8.2 Quantified data of teachers' definition of exploration from different dimensions (Note: Excel has rounded the percentage, so the total becomes 101%)

Table 8.2 Developmental domains and teachers' views of influences of exploration on children's development

Developmental domains	Specific aspects
Cognitive/intellect	Different ways of thinking like divergent thinking, creative thinking, independent thinking; motivation to learn more about the unknown; development of interests and potentials, problem-solving abilities; autonomy in learning; brain/intellect development
Social/emotional	Happiness; self-confidence; patience; enriched inner world
Physical	Mobilizing children; being lively and active; good learning and living habits
Communicative/ language	Asking questions; discussing

for children to do as many varieties of exploratory activities[4] as they wish. They make use of the available resource (open and large landscape) to provide children opportunities to engage in outdoor exploration. This, in one way or another, influences how they define children's exploration.

In consistence with findings of other researchers (e.g. Fleer, 2009; Legare, 2011) on the cognitive gains of exploration and their own conceptions of exploration, responding teachers think that exploration benefits children most in terms of their cognitive development. They believe that exploration helps children gain knowledge and abilities to solve problems. Meanwhile, this research finds that some teachers realize that exploration is helpful in cultivating children's autonomy to learn, which they see as an important quality that children should have for future learning. Additionally, exploration is seen as a channel to foster children's creativity and spirit to discover the unknown. At the same time, the teachers also mention how exploration impacts children's development in the social/emotional, physical, and communicative/language domains. See Table 8.2.

As far as the cognitive domain is concerned, the teachers mention that exploration helps facilitate children's thinking, including their ways of thinking (e.g. divergent thinking, independent thinking, and creative thinking). They also emphasize that exploration helps motivate kindergarteners to learn and discover more about the unknown. Exploration is seen as a way to develop children's interests and different potentials. Some responding teachers believe that exploration helps children develop their problem-solving abilities, because through exploration they can find problems and explore possible and different ways to tackle the problems individually or collectively especially with their hands. Another key function the teachers point out is that exploration is helpful in cultivating autonomy in learning among children who explore. Still other teachers mention that exploration supports children's brain development.

In the social/emotional domain, teachers talk about exploration is helpful in provoking happiness in children. They also believe that exploration bestows on the children with confidence in themselves because they gain abilities in solving prob-

[4] As mentioned in footnote 2, Gansu is among the poorest provinces in China.

lems through exploration. Some teachers relate that exploration fosters patience in children, which they think is good for their interpersonal relationships. Additionally, a couple of teachers say that exploration enriches children's inner worlds.

With respect to the physical domain, participating teachers believe that exploration is a good way to mobilize children in the way that children can move around and use different parts of their body especially their hands in the process. Some teachers say that exploration makes children livelier and more active. A few teachers mention that exploration in one way or another helps the children form good learning and living habits, because through exploration children learn to make plans and keep records.

The communicative/language domain is the least-mentioned of all the domains. Nevertheless, a couple of teachers note that exploration motivates children to ask more questions and discuss problems with peers.

When talking about the influence exploration has on children's development, all the teachers have mentioned its benefits for all four development domains of children, which I argue in one way or another is influenced by the national policies that promote exploration as a way to facilitate children's development. Additionally, the policies reviewed in the introduction advocate protecting and cultivating curiosity of children. Further, though most responding teachers mention all the four developmental domains as a result of explorative activities, teachers in Gansu focus more on cognitive development. To explain this difference, I argue that institutional practices influence teachers' perspectives on differences (as discussed above for definitions).

8.3.2 Explorative Activities Children Engage In

8.3.2.1 The General Exploration Process and Teachers' Role in It

In line with the finding of the open-ended questionnaires, the findings from the interviews with the teachers indicate that the exploration processes and what the teachers and children do before, during, and after exploratory activities are similar across the three regions. Figure 8.3 illustrates the process and what children and teachers do in it.

Exploratory activities take two forms: teacher-initiated and child-initiated. In teacher-initiated exploratory activities, teachers design what the children do based on suggested activities in either the national guidelines or the kindergarten-based curriculum. Teachers in all the three kindergartens also mention that some topics for exploratory activities are suggested by children during or at the sum-up step of the previous exploratory activities. Before activities, teachers will prepare necessary materials. Most of the time, the teachers engage the children in the exploration activities by asking questions or telling a related story. Different from the finding of Hammer and He (2016) that the whole exploration process is conducted according to teachers' detailed plans, this research finds that though most topics are initiated

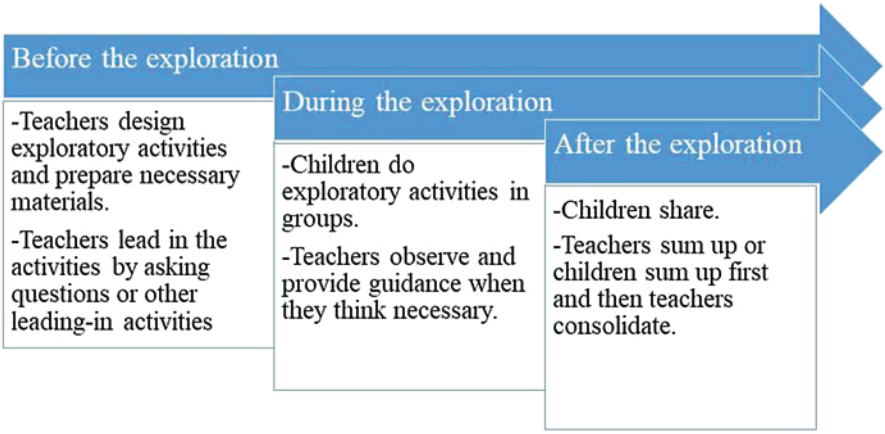

Fig. 8.3 The exploration process in the three kindergartens and the role of teachers

by teachers, children are given freedom to use their own ways to explore. The sum-up step is usually in two different forms according to time left. One involves the teachers summing things up, and the other involves children sharing what they have done, followed by the teachers consolidating what they expect the children to get from the exploratory activity. The interviewed teachers all agree that it is good to give children opportunities to share, as one of them recount, "*children usually have a lot to share after the exploratory activities*" (Teacher A). However, allowing children to share is not always possible because of their rigid daily schedule. According to the daily schedules shared by the teachers, one activity session usually last 40 min.

Child-initiated exploratory activities generally take place during free play. According to the interviewed teachers, what the children do are not necessarily exploratory activities, since they are up to the children's interests. This finding is in line with the finding of Murray (2012) that "even when they were free to choose, not all children chose to explore" (p. 1221). The interviewed teachers in Gansu mention that child-initiated exploratory activities tend to take place outdoors during free play. Children in the Shanghai kindergarten may engage in child-initiated exploratory activities during two time slots: the morning (if they come to the kindergarten before the group activities) or after lunch (before their naps[5]), either alone or with friends. According to the interviewed teachers in Yunan, children have opportunities to engage in child-initiated exploratory activities twice a day during their outdoor free play. All the interviewed teachers mention that they do not really know what activities and play are taking place during free play unless they are approached for support, help or guidance. Nevertheless, they believe that the great majority of the children are exploring and playing in their own way according to their interests individually or in a group.

[5] Children in Chinese kindergartens usually have a two-hour nap after lunch.

In line with the finding of Hammer and He (2016), the interviewed teachers also identify themselves as the children's supporters, observers, and guides in the exploration process. The supporter role is evident before the exploration when the teachers prepare materials, and during the exploration, when children need more materials or help. The observer role surfaces throughout the day, regardless of what the children are doing. Finally, the guide role emerges when the teachers identify potential danger or when the children's practices are going in the "wrong" direction. According to the teachers, *"We don't intervene unless the children are doing something inappropriate that can cause danger to themselves or the whole group or they are doing things in a wrong direction. Then we'll do something to guide them to do the right thing"* (Teacher B). However, unlike the teachers in Hammer and He's (2016) study, who emphasize their role as teachers, the teachers in this study also see themselves as playmates of the children, often acting as if they, too, belonged to the group of children: "*I pretend that I do not know why certain phenomenon appears*" (Teacher C) or "*I explore together with the children*" (Teacher E). The interviewed teachers also describe themselves as supervisors who supervise children's safety and access to materials and ensure equal opportunities in the exploratory process.

From the similarities, we can detect the influences at both the societal (national curriculum guidelines) and the institutional (ECE teachers' professional training) levels. At the societal level, ECE student teachers are required to learn how to organize activities for children, while, at the institutional level, the interviewed teachers have learned how to organize activities for kindergarteners at both pre-service and in-service professional training. According to the interviewed teachers, the activities are of the same structure and process. The curriculum in ECE teacher training programs in China are formulated based on the national curriculum guidelines and professional standards of ECE teachers. Additionally, ECE teachers are instructed that they must play different roles according to the organization, types, and timings of different activities. Further, the influence of the kindergartens' schedules on kindergartners' opportunities to share at the end of the explorative process is similar among the researched kindergartens, which conflicts with the requirement of the Professional Standards of ECE Teachers that asks teachers to provide more opportunities for children to explore, communicate, express themselves and display their performances to support and promote learning autonomy among kindergarteners (Ministry of Education of the People's Republic of China, 2011b). From this aspect, I argue that institutional practice exerts more influences on teachers.

The teachers' descriptions clearly show that they play the leading role in deciding what exploratory activities children conduct, and there exists so-called right and wrong in the exploration process. Children generally do not really have the freedom to choose what to explore. This practice in fact contradicts the teachers' conception that exploration is a process of problem-solving on children's own initiative. A possible explanation might be that teachers think their "presence and supervision is paramount for the children to engage in any type of exploration" (Chak, 2010, p. 643), which is one of the Chinese cultural traditions of the role of the teacher in students' learning (Hu & Szente, 2009). However, children can explore in their own

way in most scheduled exploratory activities. Furthermore, some exploratory activities are carried out at the suggestions of the children. These phenomena should be under the influences of both societal and institutional perspectives, as one of the interviewed teachers has mentioned that they are asked to involve children more and respect children as competent individuals by the policies and curriculum at different levels.

The differences in findings between this study and those of Hammer and He (2016) might be the result of recent reforms and policies in ECE in China, which require teachers to minimize their role as teachers, strictly restrict the "schoolification" of ECE, and implement play-based practices (refer to e.g. The Central Committee of the Communist Party of China and the State Council, 2018). Additionally, the differences may also be rooted at the institutional level, as the examined kindergartens were different. China is big and diverse, so it is natural that differences exist.

8.3.2.2 Common Exploratory Activities across the Kindergartens

Doing science-related exploratory activities is a common practice across the three kindergartens, as suggested by Early Learning and Development Guidelines for Children Aged 3–6. For example, all the kindergartens carry out exploratory activities to explore buoyancy of different objects which is a suggested activity in the guidelines. The guidelines also state that children should be supported in exploring the characteristics and features of some common substances and materials. As stipulated in the guidelines, the shared common topics for exploratory activities are to explore substances (e.g. water, magnets, and oil) across the three researched kindergartens and likely every public kindergarten all over the country.[6]

Another major common topic for exploration across the three kindergartens is natural phenomena, such as rain, wind, and leaves. Some teachers also talk about planting plants. According to the three principals, planting vegetables or other plants is very common in Chinese kindergartens for children to observe and explore the mysteries of the growing process of different plants. If they plant vegetables, they explore how they can make them food together with teachers and other staff after the harvest. They share their products with people in the kindergarten and sometimes with their family. All these we can see listed in the suggested activities in the two national guidelines that guide the formulation of kindergarten curriculum. Thus, I conclude that the societal perspective impacts teachers' practices and that ECE policies direct institutional practices in two ways: the formulation of local and institutional curriculum and how teachers facilitate kindergarteners' explorative activities.

[6] In china, there are both public and private kindergartens. Since the public kindergartens are funded and monitored by the government, they have to follow the national curriculum guidelines, while this is not compulsory for the private kindergartens. However, private kindergartens are increasingly monitored starting from the recent 2 years.

There are also some interesting findings concerning teachers' individual practices in terms of common topics. Though kindergarten teachers' conceptions of exploration and topics of activities (as stipulated in Early Learning and Development Guidelines for Children Aged 3–6) are similar across the three regions, the daily practices are diverse. Take the exploration of the buoyancy of different objects as an example. In Shanghai, they make use of a famous history story entitled "Chong Cao Weighs the Elephant[7]" to explore the buoyancy of different objects. The kindergarten is known for its emphasis on classic Chinese culture/literature, which leads to the use of historical stories for the scientific exploration. In Gansu, teachers ask children to observe sinking and floating of different objects in water and explore the reason behind what they have seen. Then, the teachers further inspire the children to explore how to make the floating objects sink in the water. As such, I argue that these differences stem from the available resources and/or distinct features of the kindergartens.

8.3.2.3 Explorative Activities of Own Distinctive Features

Findings from the open-ended questionnaire reveal that children in Gansu kindergarten experience fewer varieties of exploratory activities than their peers in Shanghai and Yunnan. As mentioned above, the interviewed teachers and principal explain that, because of their limited resources, it is not feasible to provide advanced equipment for children to do as many varieties of exploratory activities[8] as they wish. They make good use of the available resources to provide children opportunities to explore, especially outdoors. An example given by the interviewed teachers is taking children outdoors to explore the changes of the four seasons by observing, for example the changing shades of leaves in different seasons, experiencing the falling of snow and how to play with snow in different ways. The distinct features of the four seasons are visible in Gansu, making it possible for teachers to conduct explorative activities as planned. Furthermore, in Gansu, the interviewed teachers mention that when they design the exploratory activities, they consider children's interests. According to Teacher B, "*some of the contents of exploratory activities are suggested by children*".

A feature that distinguishes the kindergarten in Yunnan from the other two is that 8 out of the 33 responding teachers and the interviewed teachers and principal have mentioned that there are exploratory activities involving local cultures, especially

[7] This is said to be a true story about King Cao Cao. Once, someone gave him an elephant as a gift. People wanted to know the weight of the elephant, but it was so big that there was no scale that could weigh it. No one could suggest a way to weight it. Then, Then Cao Cao's son Chong Cao came up with the idea of using buoyance. They coaxed the elephant to a boat and marked the depth to which the boat sank with the elephant inside. Then, they drove the elephant to the bank and put stones into the boat to the marked line. Then, they weighed the stones. In this way, they learned the weight of the elephant.

[8] Gansu is among the poorest provinces in China.

different ethnicities.[9] According to the principal and a document she has shared, the kindergarten is famous as an exemplary base for ethnicity education. Take the exploration of the foods of different ethnicities as an example. The kindergarteners are taken to a local food fair to explore and taste the different kinds of food there. They explore how the same raw materials can create different varieties and tastes of food. Afterwards, they share their exploration with their peers. The interviewed principal and teachers explain that they believe this is a meaningful and effective way to make good use of their unique culture (multi-ethnicity) for children to explore. They further explain that they have good outdoor facilities which offer children even more opportunities to explore.

The kindergarten in Shanghai has the richest varieties of exploratory activities among the three kindergartens. Around a half of the responding teachers in Shanghai mention that children can do exploratory activities in all the five learning areas, as explained by Teacher F: "*our children can do exploratory activities in all the five learning areas listed in the guidelines*". Topics of exploration are diverse. In addition to science, exploration is integrated into math, sports, language, and art. A distinguishing feature of the Shanghai kindergarten is that it has an exploration room for children. Four teachers there also mention that they have a "nature corner" for children to explore nature and other topics that interest them. Some teachers mention that they create environment for children to explore with their bodies. One given example is that the walls are of different materials with some being hard or soft and others rough or smooth which provide children opportunities to explore the textures of different building materials. One thing worth mentioning here is that some teachers mention individualized learning/games intended for exploration as well. According to the interviews, the individualized learning/games are in different forms. The interviewed principal and teacher mention that, with both indoor and outdoor facilities and resources, children have the opportunities to do different exploratory activities.

The distinctive differences among the three kindergartens can be best explained by the differences in institutional practices. Based on the guidelines, starting from Shanghai, the ECE teaching and research department at regional or provincial level have compiled theme-based curriculum, which stipulate directions for local kindergartens to conduct teaching and activities. There are also kindergarten-based curricula. Among these three kindergartens, in addition to provincial curriculum, all have their own kindergarten-based curriculum, highlighting the unique features of the kindergartens and distinguishing them from other kindergartens. In terms of the dynamics across institutional practices, I argue that, though teachers share similar conceptions of children's exploration, the available resources have provided different conditions for teachers to practice, resulting in more constraints on the practices of teachers in Gansu than on the practices of teachers in the other two locations.

[9] Yunnan has 52 ethnicities out of 56 total in China, making it the most diverse province.

8.4 Conclusion and Implications

This chapter has found that government policies in the form of curriculum guidelines and opinions on how to implement reforms influence institutional practices through influencing teachers' conceptions and stipulating directions for what and how to do. More importantly, institutional perspectives, including teacher training and kindergarten practice, play more significant roles in affecting what and how teachers organize exploratory activities for children in the researched kindergartens. The study shows that, while the societal perspective is important and influential for teachers' conceptions, institutional practices (teacher education/ training and kindergarten practice) play a more significant role in teachers' practices.

It is believed that this comparative study can inspire possible courses of action in China and internationally and have implications for researchers who want to utilize the cultural–historical framework to study teachers or other adults.

This research indicates that teacher education/training, as one of the practices at the institutional level, influences ECE teachers' conceptions and practices. This implies that high- quality pre-service and in-service education/training for kindergarten teachers are critical. It is undeniable that facilities and resources are important. At the same time, kindergartens can make good use of the available resources and cultures to provide opportunities for children to engage in local- and cultural-appropriate exploratory activities. Recurring themes from research, theories, and practice suggest that high-quality early childhood programs provide environments and experiences for children to explore ideas, investigate their theories, and interact with others in play (Ministry of Education, Ontario, 2014). The practices in the kindergartens in Gansu and Yunnan have set good examples. Besides, exploration can take place in different learning areas and in diverse forms, as in the Shanghai kindergarten. This aspect also calls for both good practices in kindergarten and quality teacher professional development programs.

Government policies and curricula at different levels are also influential in deciding what exploratory activities teachers organize and how they organize them for children. Policy influences teachers' practice, especially if they are mandatory (Synodi, 2010). This is especially true in China, which has a centralized government. As a result, it is critical that policy should be carefully made based on scientific and empirical research. At the same time, this study finds that teachers are not necessarily faithful followers of policies; rather, they are influenced by different variables at institutional level. This implies that teachers need good content and pedagogical knowledge to make sound judgments about daily practices, which also calls for quality ECE pre-service and in-service teacher education/training.

Available resources and local cultures are also influential factors that affect teachers' daily practices. Equality and equity in resource allocation is important for ECE development. In China, there exists a significant discrepancy in development paces and resource allocations among different regions, resulting in gaps in development and the progress of education. Some activities not necessarily just

exploratory activities require resources. As a result, it is important that the central government take measures to narrow the gap in terms of investment on education.

Indicated in findings that the formal exploratory activities in this research are mostly teacher-initiated. A balance of high and low contributions of teachers and children (Roberts & Tamburrini, 1981) in explorative activities should be implemented in daily practices. It is necessary for teachers to be part of children's activities, but not necessarily the initiators or high contributors. Through being initiators or with high contribution, children can learn to be autonomous and independent learners and probably will gain more. This is important for children's cultural formation in many ways. More importantly, there should be a balance between child- and teacher-initiated activities to realize the aim of holistic development (e.g. Miller & Almon, 2009; Waters & Maynard, 2010). This applies to both exploratory and other activities.

The findings have illustrated that because of the kindergarten schedule, children may not have the opportunity to share which supports children's cognitive and communicative development. Time limitations may make the children's exploration less beneficial (Murray, 2012). This implies that a flexible schedule for exploratory activities is desirable.

Finally, this study demonstrates that cultural–historical framework can be extended to explore teachers' daily practices and thus their development, in addition to examining the cultural formation and development of children and youth. This study considers only teacher education/training and work practices at the institutional level. Therefore, future research may consider adding free-time practices related to the research topic as another component at institutional level and collecting observation data to garner more complete findings.

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