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Development of Chinese Preservice Teachers' Knowledge of Teacher-Student Relationships Based on a Reciprocal Learning Program

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Abstract

Teacher-student relationships (TSRs) is highly influential in school education and hence teachers' knowledge about TSRs can make a difference in school education. Teacher knowledge is constructed long before teachers enter the career path formally and various teacher education programs exerts influence on it along with teachers' life experience. This article compares Chinese preservice teachers' TSRs knowledge before and after a transcultural and reciprocal learning program in teacher education the research participants included 22 preservice teachers from X University in China. It adopts a mixed method combined qualitative (interviews) and quantitative (questionnaire) methods. These participants responded to a same instrument before and after the program. And six interviewees were chosen for further interviews according to the mean changes on the Likert Scale in the questionnaire. Both quantitative and qualitative data were collected for analysis and discussion. Statistically significant differences were found between the means of the pre- and post-test in the three dimensions of the scale. Findings indicate that some knowledge development occurred in the participants beneficial from the program and their TSRs knowledge is a socially constructed product in the past-now-future continuum of personal life experience.

Keywords: teacher-student relationships (TSRs), Chinese preservice teachers, reciprocal learning; teacher knowledge

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Introduction and Purpose of Study

Education cooperation between China and other countries and regions of the world has been expanding since Reform and Opening Up in 1978, (Wei & Hu, 2018) among which higher education is marked particularly (Hayhoe, 2001; Wende & Zhu, 2016). Transcultural thinking and understanding is highlighted within the globalization and internationalization of education, (Grossley & Tikly, 2004; Gong, 2012) so is in the field of teacher education. (Howe & Xu, 2013; Howe, 2014) A question aroused therefrom China's integration into the education globalization and internationalization: what does the international educational relations mean to China? Penetration or mutuality? (Hayhoe, 1986) A follower of leader? (Wende & Zhu, 2016) The concept of transcultural reciprocal learning is gaining ground gradually within these debates. Reciprocal learning in the transcultural context emphasize the reciprocity among cultures with very different historical and philosophical origins, like the intersection of Confucian and Deweyian philosophies of education. (Xu, 2006; Xu, 2017) Reciprocal learning is about mutual respects, understanding and learning of each other's knowledge, values, and teaching methods in the context of school education and teacher education. (Xu & Connelly, 2017)

Within the wave of globalization and internationalization of teacher education, both in-service and preservice teachers have more chances to learn and practice beyond national boundaries. However, teacher education program integrate overseas field experience opportunities are most designed for preservice teachers. (Cushner, 2007; Mahon, 2007) Such transcultural teacher education program is practice-oriented while complemented with theory and culture learning, so as to provide both knowledge and firsthand experience in the host country. This research is inspired and supported by a reciprocal learning program between Canada and China. Our specific focus is paid to the Chinese preservice teachers' knowledge about teacher-student relationships (TSRs).

TSRs is highly influential in school education. (Roorda, et al., 2011; Klem & Connell, 2010; Hamre & Pianta, 2001) To improve teaching and teacher education, a knowledge base about TSRs is built in the past decades (Wubbels, 2017). TSRs is one of the most important interpersonal relationships since they are at the centre of teaching and learning. (Brinkworth, et al., 2017) Given the importance of communicative interaction between teachers and students in the development of both students and teachers, TSRs knowledge is thereby necessary for the prospective teachers in teacher education and development.

Set in the transcultural teacher education program between Canada and China, the inquiry to TSRs in the dialogue of West-East is where we began in this study. The purpose of the study is to inquire into the knowledge development of Chinese preservice teachers in a specific aspect (TSRs). Accordingly, the following questions are addressed:

1. What's the initial TSRs knowledge of the preservice teachers?
2. What development occur in their TSRs knowledge following the reciprocal learning program?
3. What are the sources of their TSR knowledge?

The reciprocal learning program (RLP)

This research is set in a particular transcultural teacher education program between Canada and China—The Reciprocal Learning Program in teacher education and school education (RLTESECC). The Reciprocal Learning Program between Y University in Canada and X University in China (X-Y RLP) is a sub project. The team members include researchers in universities and teachers in sister schools from Canada and China.

The philosophy of the RLTESECC is aiming to connect researchers, school board administrators, teachers, and students of both sides (Canada and China) closely and enable them to contact directly; and finally, promoting reciprocal learning of knowledge, values, and teaching methods (Xu & Connelly, 2017). Schools, teachers, students and educators tied by this partnership are

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put in the framework of reciprocal learning which in essence contains two key elements: cross-cultural collaboration and learning for mutual benefit. (Huang, 2017) The RLP enjoys a mutual knowledge transfer which see the knowledge of teachers, students and educators from Canada and China as of equal importance.

The X-Y RLP is a transcultural teacher education program which is in the reciprocal learning context. Since 2010, about 20 preservice teachers from X University accompanied by a college supervisor went to Y University for a three-month learning every year or every half year. The cohorts from Y University began the visit to X University in the following year. In every visit, the exchange preservice teachers are arranged to a full schedule, including having lectures and participating in workshops in the host university, undertake internships in sister schools (K-12) and write reflections and portfolios.

Conceptual framework

Reciprocal learning

The deepening of educational cooperation beyond national boundaries and the augmenting of criticism on Western Centralism, Western hegemony of knowledge and neo-colonialism stimulate the expansion of reciprocal learning in the transcultural context. (Scholte, 2014; Howe & Xu, 2013; Xu, et al., 2015) Transcultural learning or cooperation gradually put emphasis on mutuality, reciprocity and equality, which is exactly what reciprocal learning embodies. Reciprocal learning rejects unidirectional learning which implies an unequal cultural view and value, often with a strong side as the dominant while the other side as the subordinate, but emphasizes a mutually equal and sharing collaboration. Reciprocal learning means that two or more groups in the process of learning are able to stimulate mutual appreciation, understanding and respect. (Connelly & Xu, 2010)

Teacher-student relationships

Teacher-student relationships is a hot issue in the context of school education. Studies on this topic mainly consisted of four domains. (1) Conceptualizing TSRs and its structural elements. Researchers typically defined TSRs from different theoretical perspectives. From the perspective of interpersonal interaction theory, TSRs could be understood as the generalized interpersonal meaning students and teachers attach to their interactions (Wubbels et al., 2006). From the perspective of phenomenology, there were five dimensions of educational TSRs: information providing, instructing, facilitating, guided participation and mentoring. (Beutel, 2010) (2) perceptions of TSRs of different groups, i.e., students, teachers and parents; (i.e. Forkosh-Baruch & Hershkovitz, 2018; Poulou, 2016) (3) What affects TSRs and what are affected by the quality of TSRs. For the antecedent influential factors, school structure, such as class size and school size, affected the formation of TSRs. (Pieratt, 2011) Teachers' communication style, character, job satisfaction, teaching experience, stress, teaching method were also conducive to the formation of TSRs. (Zee, et al., 2017; Spilt, Koomen, & Thijs, 2011) Students' gender, age, race, society economic status, personality traits and other personal factors exerted influence on TSRs. (Hajovsky, et al., 2017) TSRs is also an antecedent variable for the development of teachers, students and schools. TSRs played a role in both students' and teachers' wellbeing in schools. (Claessens, et al., 2016) Positive TSRs could effectively prevent disciplinary problems, teacher stress, teacher burnout, and promote teachers' career growth. (Kagan & Tippins, 1991) Also, the quality of TSRs had a positive relation with teachers' job satisfaction and happiness. (Veldman, et al., 2013; Yoon & Jina, 2002) TSRs made some difference in student learning. Good TSRs had a positive effect on student's motivation, scores and academic success. (Hamre & Pianta, 2001) (4) The constructing strategies of TSRs. Often started by illustrating the existing problems of TSRs in school context, strategies for improvement are suggested. (e.g. Pennings, et al, 2014)

In the field of teacher education, preparing preservice teachers for relationships with students is a newly-emerging topic. (Theisen-Homer, 2020) TSRs knowledge is therefore fundamental. Dimensions of research in the field of TSRs shed light on the knowledge domains of TSRs, which

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guides us to design the research tools.

Theoretical Framework

Teacher knowledge

Teacher knowledge and teacher education make a teacher. (Grossmann, 1990) Teacher knowledge has a practical and experiential nature. (Xu & Connelly, 2009) Connelly and Clandinin (2000) distinguished teacher knowledge and knowledge-for-teachers that the former refers to what teachers know through life experiences including what they are taught while the latter refers to knowledge taught to teacher in various teacher education and training programs. Teacher knowledge is a narrative construct which is generated from their experience as teachers (Fenstermacher, 1994) including what teachers are formally taught in teacher education and training programs and everything they know as persons. (Xu & Connelly, 2009) To recapitulate, what teachers are taught in formal settings of teacher education programs and what they know as persons through life experiences in sociocultural, sociopolitical and socioeconomic contexts contribute to teacher knowledge. It appeared as a multi-faced theme therefore. Research on the domain of teacher knowledge is abundant. (i.e. Shulman, 1986; Grossman, 1990; Grisham, 2000) From a narrative perspective, teacher knowledge comprises personal practical knowledge (Clandinin, 1985; Connelly & Dienes, 1982) and professional knowledge landscapes (Clandinin & Connelly, 1995) which refers to the reciprocity between social context teachers work and their personal practical knowledge.

Preservice teachers know TSRs from both formal settings of school education and teacher education, and through their individual life experiences. We not only focus on the knowledge development of the Chinese preservice teachers in the context of the RLP, but also try to inquire into their life experience which relates to their TSRs knowledge. Hence we can better understand their knowledge origins in a malleable space-time continuum and their knowledge development in the RLP context.

A framework of TSRs research

Teacher knowledge and TSRs are both multi-faced as described above. To clarify the knowledge structure or discourse of TSRs, this research adopted a three-dimensional knowledge model “know what” “know why” “know how” (Adoniou, 2014) to better describe and analyse the preservice teachers’ TSRs knowledge based on the research domains of TSRs. “Know what” knowledge means knowledge for practice (Cochran-Smith & Lytle, 1999) which involves knowing “something” (concepts and structures of TSRs); “know why” knowledge is formal, learned and specialized knowledge reflecting the hierarchical nature of knowledge (antecedent and post dependent factors of TSRs); “know how” knowledge means knowledge in practice (constructing strategies). “Know what” knowledge is the base of other two kinds of knowledge and the standing point for discussing other aspects of knowledge. “Know why” knowledge can be used to reflect on the adequateness and appropriateness of our “know how” knowledge in the context-setting. These three dimensions are interacted and constructed narratively in the life course of preservice teachers. Figure 1 shows the analytical framework which is also the dimensions of the self-complied questionnaire.

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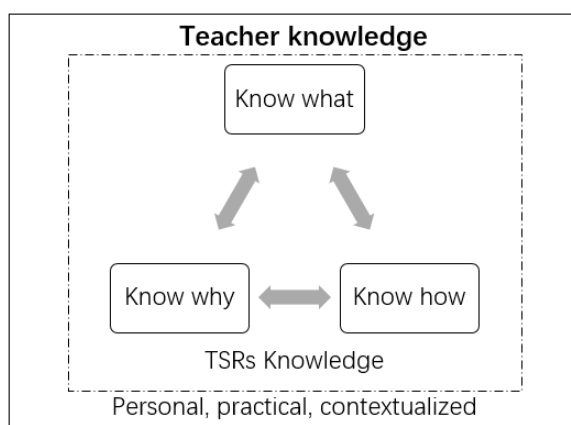


Figure 1. Three discourses of TSRs knowledge

“Know what” knowledge is the declarative knowledge in relation to the nature, characteristics and structural elements of TSRs which lays the foundation for other domains of TSRs. “Know why” knowledge is explanatory including our explanations and answers to two questions: what affects the quality of TSRs (antecedent factors) and why TSRs is important in the school context or even broader societal context (post-dependent factors). “Know how” knowledge is contextualized and practical which is all about how to deal with issues about TSRs in daily practice.

Methods

Samples

The study involved 22 preservice teachers. The student samples consisted of 22 undergraduates who participated in the three-month RLP from September to November in 2017. The participants of the program were selected from over 50 candidates. The distribution of the preservice teachers in relation to their majors, including 11 different majors which nearly cover all the subjects in schools, is roughly equal (see Table 1), 8 (36%) of them are social science majors, 7 (32%) are science majors and 7 (32%) are Arts or Physical cultures majors. Except pre-school education majors, all of the preservice teachers are going to be high school teachers after graduation in China. Gender and grade distribution are also shown in table 1. There are 3 (14%) males and 19 (86%) females. As for grades, there are 1(5%) sophomores, 19 (86%) juniors and 2 (9%) seniors. Their ages range from 19 to 23 years old; 82% of them are between 20 to 21 years old who are all junior undergraduates.

Table 1. Population distribution

Major		Number	Male	Female	Sophomore	Junior	Senior
Social science	History	2	1	1			2
	Pre-school education	2		2		2	
	Philosophy	2		2		2	
	Chinese	1		1		1	
	Geography	1		1		1	
Science	Chemistry	2		2		2	
	Computer Science	1		1		1	
	Physics	2	1	1		2	
	Math	2		2		2	
Arts & Physical cultures	Physical education	4	2	2	1	2	
	Fine arts	3		3		3	
Total		22	4	19	1	19	2

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Besides, the 22 preservice teachers have gone through a one-week practicum in kindergartens, primary or secondary schools (depends on their majors) in China before their transcultural learning and visit to Canada.

The instruments and the structure of the research

To gather data about the preservice teachers' development of TSRs knowledge, we used a self-complied questionnaire and semi-structured interview before and after their transcultural visit. The questionnaire was composed of two closed sections (a section of single choice questions and a Likert Five-point Scale) and an open-question section.

1. The first part (4 items) is demographic information, including age, gender, major and grade.

2. In the second part (35 items) of the questionnaire, we used Likert Five-point Scale (1=definitely applies; 5=definitely does not apply) to evaluate the preservice teachers' TSRs knowledge according to the aforementioned three dimensions of knowledge: (1) "know what" knowledge (nature and characteristics of TSRs); (2) "know why" knowledge (antecedent and post-dependent factors of TSRs); (3) "know how" knowledge (practical issues about TSRs).

3. The open section involved their individual views about TSRs included the following questions: (Please write at least 3 answers or short statements for each question)

a. How do you know or learn the TSRs knowledge? Like school experiences as primary/secondary students, theory learning in college or other institutions.

b. What are the characteristics of good TSRs from your angle based on **your life experiences**?

The scale in the original questionnaire contained 35 items altogether. We sent out 30 questionnaires for pretest, and the internal consistency estimates is quite low (.651). So we deleted 5 items which are little relevant with the whole questionnaire through item analysis. Finally, Cronbach's alpha for the 30-item-scale is 0.833. The internal consistency estimates for the three sub-scales are shown in table 2. And the validation of the 30-item scale is conducted through the expert judgement of three professors of the RLP.

Table 2. Reliability analysis of the scale and sub-scales

	Cronbach's Alpha	items
Whole scale	.833	30
Sub-scale 1 : "know what"	.728	9
Sub-scale 2 : "know why"	.709	12
Sub-scale 3 : "know how"	.698	9

After obtaining permission from the dean of Teacher Education College of X University and 22 preservice teachers, we presented information about the nature and purposes of the study in their presence. Then we administered tests to the 22 preservice teachers one day before they went to Canada and ten days after they came back to China. The same questionnaire was used for two rounds of tests. Based on the preliminary analysis of the pre- and post-test, we chose 6 preservice teachers as our interviewees for further information. The interviewees were selected according to means changes³ in the scale for pre- and post-test. The 6 preservice teachers who showed more changes on the mean differences were chosen to be our interviewees. According to our criteria, 4 preservice teachers experienced major development, 13 of them showed moderate development and 5 had no development.

In the semi-structured interview, we asked the 6 preservice teachers to elaborate on their development of TSRs knowledge following the three-month transcultural visit. We started with a general question (e.g., What's your view about TSRs through your life experiences?) Overall the

³ The mean equals to the total score of the scale divided 30 (items).

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interview lasted between 40 minutes to 60 minutes. Also, we collected all the reflective diaries and meeting briefings of the 6 interviewees for supplementary information, trying to take a deeper look into their personal experiences especially in the course of RLP.

Integrating both the qualitative and quantitative data enabled us to obtain not only an overview of their TSRs knowledge, but also some detailed information, like knowledge origins. Thus, it helped us to overcome the limitations of using only one data collection method.

Data Analysis

The analysis of the closed-question sections of the questionnaire included frequency distribution, means, independent-sample t-test and one-way analysis of variance statistics. The written responses of the questionnaire, the interviews transcribed into texts and their reflections and portfolios were categorized into several categories and analysed for which we tried to avoid prejudice and subjectivity for finding out the detailed knowledge development and catalyst behind them. The comparison of the pre- and post-test was based on the difference in means of total score (t-test and the p value):

- 1.No development. There is no significance of the difference between the two means. ($p>0.05$)
2. Moderate development. The difference between the two means is significant. ($0.01<p<0.05^*$)
3. Major development. The difference between the two means is very significant. ($p<0.01^{**}$)

The t-test only provided a very simple and straightforward result for us to detect the knowledge development of the preservice teachers with regard to different dimensions of TSRs. All the texts including the results of open questionnaire, reflection diaries, portfolios and interviews were coded and analysed for detailed information.

Also, we compared the mean differences of **each participant** in pre- and post-tests and selected interviewees in accordance with the mean changes. Those who experienced more development in TSRs knowledge, namely, who experienced more mean changes were chosen as our interviewees for further research. The criterion of selection was on the basis of each participant's degree of development.

1. No development. The difference in means for pre- and post-test ranged from 0 to 0.5(including 0.5).
2. Moderate development. The difference in means for pre- and post-test ranged from 0.5 to 1(including 1 but not 0.5).
3. Major development. The difference in means for pre- and post-test ranged from 1 to 1.5(excluding 1).

Results

Analysis of the closed questionnaire

Table 3 presents the means, SD and a t-test comparison of both pre- and post-test. In general, 22 preservice teachers' knowledge development in TSRs is significant during and following the RLP. ($p=0.035<0.05$) With regard to the three dimensions of the scale, there are significant differences in the means of the total score in all the dimensions except a component of the sub-scale "know why" (antecedent factors). Specifically, in line with the p value of t-test, their "know what" "know how" knowledge developed significantly according to our criteria.

- 1.Know what: from emotion- and knowledge-oriented to ethics- and morality-oriented

As for the nature of TSRs, before they went to Canada, they described the nature of TSRs as emotion- and knowledge-based. 77% ("definitely applies" or "applies somewhat") of them believed

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that TSRs was emotional relationships between teachers and students, sharing much similarities with parent-child relationships. (mean=1.88) At the same time, imparting knowledge (mean=2.12) was the prioritized goal in the interactions between teachers and students. (50% of them chose “definitely applies” and 36% of them chose “applies somewhat”) Following the program, however, their focus transformed to the ethics and moralities of TSRs. While the ratings of the aforementioned items (“emotion” and “knowledge”) were higher than before (mean =3.08, 3.11), the ratings (degree of compliance) of “ethics” (mean=3.21, 1.92) and “moralities” (mean=3.33, 2.01) were decreasing. 68% of the preservice teachers selected “definitely applies” or “applies somewhat” in the item “The ethical component of TSRs is very important” and 77% of them chose “definitely applies” or “applies somewhat” in the item “Compared with the law, TSRs is based on morality”. The ratings on the other 5 items were stabilized at a level. The “know what” knowledge developed moderately. They reshaped their theoretical view about TSRs and gained some new factual knowledge to some extent.

Table 3. Comparison of pre/post-test

		Know what	Know why		Know how	total
			antecedent	Post dependent		
Pre-	Mean	28.1667	12.0556	22.9444	30.8333	94.0000
	SD	4.59219	3.01900	3.87256	3.61777	15.10152
Post-	Mean	33.7619	17.6190	28.6667	35.1429	115.1905
	SD	3.25430	3.07370	3.02214	3.18254	8.79556
	t-test	.041*	.569	.018*	.021*	.035*
affect		Moderate development	No development	Moderate development	Moderate development	Moderate development

Note *(0.01<P<0.05)

2. Know why: internally imbalanced

2.1 Their knowledge about the antecedent factors of TSRs was stable with no observable development

In items about antecedent factors, the participants tended to rate each item similarly in pre- and post-test. Teachers’ educational ability, personality, personal charm, attitude, temperament and appearance are selected as “applies somewhat” in the scale while students’ coordination was thought to affect the quality of TSRs definitely. (“definitely applies”) Beyond these two subjects, the atmosphere of school and parent-child relationships in family also mattered. (Both are “applies somewhat”) On the whole, the preservice teachers demonstrated consistent “know why” knowledge in the aspect of factors affecting TSRs.

2.2 Their knowledge about the post dependent factors of TSRs was clarified and deepened

There was a shift from emphasizing the prospective values to attending to both the prospective values and long-term values in this aspect of importance of TSRs. The prospective values of TSRs were admitted consistently. For instance, in the item “Good TSRs helps to improve the teaching efficacy”, most of them agreed to this statement. (86% of them picked “definitely applies” or “applies somewhat” in the pre-test and 77% of them picked the two options in the post-test). The first difference was that the long-term values of TSRs were stressed following the program. For example, in the item “TSRs have potential influence on the whole life of students”, the mean reduced to 2.31 from 3.77. (45% of them picked “definitely applies” or “applies somewhat” in the post-test) Additionally, the values of TSRs were expanded, not only on the external value but also on the internal value such as the correlation of good TSRs and teachers’ self-esteem. Their “know why” knowledge might have developed beneficial from the practical orientation of RLP. During the whole process of the program, the participants were encouraged to retrospect on their life experiences as students of schools, as children of families, as members of communities and social beings of the society. They were pursuing “why” on solid personal practical experience.

3. Know how: get more practical and contextualised

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“Know how” knowledge is in essence practical since it’s knowledge about taking actions. Again, the RLP appreciates the reciprocity of experience, knowledge, practice and communication among the program participants including the preservice teachers and program facilitators. In this dimension, they were prone to be more realistic, objective and convicted. In the pre-test, their answers showed a general and abstract understanding of the practice of TSRs, which tended to be idealistic. For example, in the item “Equality is the absolute criteria of practicing TSRs both in and outside the classroom before they went to Canada”, 54% of them selected “definitely applies” in the pre-test. However, only 18% of them remained at the same option in the post-test. Also, in the item “Teachers and students should love each other as if they were friends”, the mean of it increased to 3.91 from 2.79, implying that they saw TSRs from a more objective and professional angle. Meanwhile, they gradually treated TSRs dialectically. For instance, in the item “Teachers and students cannot achieve all-round equality in every aspect, such as during the teaching activities. (mean decreases 1.01) That is to say, they accepted that there might be some inequalities between teachers and students in and outside the classroom. It was witnessed that they developed their “know how” knowledge through this reflective transcultural experience regardless their deficient teaching experience and practical considerations. They were evoked to reflect on their past-now experience and conceive of future practice.

4. Differences in relation to the heterogeneous nature of the sample were not identified.

The sample was heterogeneous in relation to gender, major, age and grade. The t-test and the ANOVA statistical analysis revealed little differences with regard to these four factors in the three dimensions of the closed part of the questionnaire.

Analysis of the open questionnaire

The open part of the questionnaire consisted of 2 questions recommending short statements. The written texts of the two questions were concluded to 10 and 11 different statements respectively. (see table 4) These statements are served as the basis for the comparison of the knowledge development of the preservice teachers’ in two aspects. On the whole, the similarities of their answers in pre- and post-test overwhelms the differences, but still, there are some slight changes.

Table 4. Statements of the open questions

Question	Statements	
	Pre-	Post-
Knowledge origins	1.Experience as students in primary and secondary school	1.Theory learning in college class
	2.Theory learning in college class	2.Independent reading about relative topics
	3.Independent reading about relative topics	3.Teaching practice course in college
	4.Teaching practice course in college	4.Traditional cultures about relationships between teachers and students
	5.Traditional cultures about relationships between teachers and students, like teachers’ professional moral culture	5.Perceptions of teacher-student relationships in classroom of both countries (observations and practicum in primary or secondary school)
	6.Perceptions of teacher-student relationships as preservice teachers (observations and practicum in primary or secondary school)	6.Conscious reflections on teacher-student relationships
	7.Social climate of relationships in school	7.Discussions with others
		8. Social climate of relationships in school
		9.Comparisons of teacher-student relationships in China and Canada

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Characteristics of good teacher-student relationships	1. Mutual respect and love	1. Mutual respect and love
	2. Cooperations with each other	2. Cooperations with each other
	3. Democracy and equality	3. Democracy and equality
	4. Harmony and intimacy	4. Teaching benefits both teachers and students
	5. Sharing experience	5. Appropriate distance between teachers and students
	6. Teaching benefits both teachers and students	6. Equal and consistent communication
	7. Mutual understanding	7. Acceptance and tolerance
	8. Transparent communication	

As for the knowledge origins of their TSRs knowledge, the following comparison can be made:

1. Beneficial from this program, their knowledge origins about TSRs added, becoming more diverse. They began to seek for a solid base through their life experience in every aspect for their TSRs knowledge, especially the nearer and newer experience of their own were considered. Practical considerations were into their view.

2. Transcultural comparisons of TSRs made some difference to their current knowledge. Reflections on the comparisons helped to broaden and deepen their TSRs knowledge.

With regard to the characteristics of good TSRs, the following comparison can be made:

1. They were beginning to realize that the appropriate distance between teachers and students was necessary instead of the full appreciation of closeness and intimacy. The professionalism of TSRs was stressed gradually.

2. The communications between teachers and students mattered in constructing good TSRs, however, they were more attending to the quality of equality and consistency than the transparency. Namely, they valued the two characteristics in communication and paid more attention to the efficiency of communications.

Analysis of the interview and other collected texts of the 6 interviewees

As aforementioned in the data analysis section, the 6 interviewees were picked according to the mean changes. (table 5) Through the analysis of all the text data of 6 interviewees, we found that the results supported the results of the questionnaire, and some new detailed information emerged meanwhile. Here list the themes they most care regarding TSRs (which were most mentioned or quoted in their interviews and all the other narrative materials) to further indicate their development in TSRs knowledge.

Table 5. Biographical features of the 6 interviewees

Name	Gender	Age	Grade	Subjects to teach	Mean		Difference	Change affect
					Pre	Post		
Mark	M	21	Junior	P.E.	3.54	2.17	1.37	Major development
Mary	F	20	Junior	Fine arts	3.4	2.08	1.32	Major development
Susie	F	22	Junior	Chinese	3.2	1.92	1.28	Major development
Lily	F	21	Junior	Politics	2.92	1.88	1.05	Major development
May	F	20	Junior	Physics	2.86	2.13	0.73	Moderate development
Joe	M	22	Junior	History	2.43	1.79	0.64	Moderate development

In consideration of the anonymity, we concealed their real names.

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1. The preservice teachers' TSRs knowledge gets more broadened and reflective

Teacher-student equality and teachers' emotion are the two most mentioned themes. For the equality issues, they get rid of idealism to face up to the pre-existing inequalities in interactions with students. Firstly, they believe that there are some objective and unavoidable inequalities in TSRs, "because teachers are more sophisticated both in knowledge and experience than students". (Susie) For coping with the equality issue, Joe thought teachers should strive to create an equal atmosphere both in and outside the classroom. But at the same time, "the absolute or all-round equality between teachers and students could never be achieved". (Joe) Furthermore, they are not pessimistic about the inequality, regarding that inequalities in TSRs might have positive effects. "It is conducive to teachers' teaching and students' learning". (Lily) Secondly, the inequity is mutual, namely, teachers are not always surpassing students. For example, "teachers might know more about subject matter, but students in turn might know more about Lego. This is a positive process of mutual learning". (Mary) Thirdly, there exists some perception differences of teachers and students. "Although teachers think they are equal to students, students still feel unequal..... Yes, you are a kind teacher to me, but you are a 'teacher' still". (Lily) Also, for the professional characteristics of teachers, teachers are obliged to supervise their students. "Sometimes they are strict and harsh, which might give students the impression of inequality". (Susie) As a critic to teacher centrality, equality between teachers and students is a hot issue in TSRs. The value of equality is valued by the preservice teachers. However, they are conservative about all rounds of equality.

Teachers' emotion is another highlight. The preservice teachers agreed that teachers should devote certain amount of emotions to TSRs, but not excessively. Teachers should not be over-emotional. On the one hand, certain emotional involvement could enhance mutual understanding. "Teachers can have a deeper and more complete understanding of students' life, learning and so on, and provide timely help to students". (Mary) On the other hand, emotions are not the whole story of TSRs, and it is inappropriate to invest emotions overly. "When I was a student, I hoped my teacher could help me anytime and anywhere. So I thought that being a teacher means taking care of all the students at first. However, with my in-depth and close observation of Canada classes, I began to realize that being a teacher is only a profession, and the relationships between teachers and students is a kind of social relationship that cannot hold too much personal feelings". (Susie) We can conclude from Susie's story that past experience as students influenced her views about TSRs, and transcultural experience prompts her to reflect on her old knowledge. They still acknowledge the importance of emotional input in TSRs, but they are more cautious about the boundaries given a full consideration of the professional attribute of teachers.

Their knowledge development is in a past-now-future continuum. What they experienced as students in the past, what they see and practice as preservice teachers now and how they view TSRs and act in future careers is a practical framework with time series. It's personal, practical and sustainably developed during their life course. This is in line with the objective and value of the RLP.

2. Different TSRs is narratively constructed in different social culture

Teacher knowledge is the products of reflective thinking on teachers' personal and practical experience. Also, all knowledge is socially constructed, (Capel, 2007) including teacher knowledge. Firstly, although they think that there are merits in Canadian style of TSRs, they all agree that Canadian model cannot fully applies to China. The difference in TSRs between China and Canada lies first in the varieties in the overall social atmosphere of the two countries. So that students who grow up in different soils have different personalities and ways of thinking. "The difference lies in the form and explanation of good TSRs in the two countries. We can't completely replicate the Canadian model, only some ideas can be transferred to our practice after slight adjustment". (Mary) Secondly, comparative reflection on this personal professional practices deepens their understanding of Chinese style TSRs. They try to seek for the imprint of Chinese traditional culture on TSRs. "I used to think that the implication of hierarchy in TSRs is absolutely unacceptable and that teachers and students

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should be completely equal. But now I am beginning to rethink the rationality of teacher's moral dignity and authorities.....The traditional culture, 'respecting teachers are same as respecting knowledge' (in Chinese 尊师重道) makes sense even today". (Joe) Thirdly, the word "distance" frequently appeared in their interviews and reflective diaries (46 times). It seems that distance is a highlight in Canadian style of TSRs in the observations of the preservice teachers. The distance between teachers and students is fixed by the rules. "There are strict physical and emotional boundaries between teachers and students. For example, the toilets of teachers and students are separate". (Mark) The deliberate distance between Canadian teachers and students is noted by the interviewees. "Teachers seldom touch students". (May) "The boundaries between teachers and students are very clear and often seem a little cold". (Lily)

We can see that their knowledge is both personal and societal. Transcultural experience broadens their knowledge of western education and thereafter they reshape their knowledge about TSRs through a critical rethinking of their personal practical knowledge and contextualised knowledge.

3. The preservice teachers' TSRs knowledge reveals a practical side

Based on the reflective comparison of the TSRs between China and Canada, they draw their own blueprints of ideal TSRs. Beneficial from the RLP, they not only look at the status quo of TSRs in Chinese schools more rationally and objectively, but also initially form their ideal model of TSRs. Equal communication, mutual comfort, mutual respect and complementarity are the keywords of ideal TSRs obtained in interviews which are in accordance with the aforementioned characteristics of good TSRs in table 4. Firstly, good TSRs is a result of interaction. Combined her teaching practicum in China and experience in Canada, Lily summarized that "teachers and students are equally important in the process of establishing good TSRs, and successful TSRs is the result of the joint efforts of teachers and students". Namely, good TSRs is an outcome of mutual efforts and complementarity of teachers and students. Secondly, their visit to Canada prompts them to think about the urgency of thinking about the practical issues of TSRs. "It's time to think (about this issue) seriously". (Mark) The practical issue of TSRs is gaining place in their knowledge domains.

Their know how domain of TSRs knowledge is developing on the basis of know what and know why domain. Contextualising TSRs in Chinese climate, they have a preliminary intention on how to build good TSRs in future teaching careers, although the concrete and operational strategies are still unformed.

Discussions and conclusions

Under the framework of the RLP, this paper is focused on the Chinese preservice teachers, with a purpose to explore what aspects of their TSRs knowledge develop and how the RLP promotes their newly formed knowledge. By the comparison of their TSRs knowledge before and following the program, we found that certain developments occurred and this confirmed our hypotheses that transcultural teacher education program did account for their knowledge development about TSRs. On the one hand, there was little research about correlation of participation in transcultural teacher education program and teacher knowledge development, especially about TSRs, hence, we hardly knew the extensibility of our findings. And while considering the theoretical and practical significance of the present research, the limited scope of this study should be taken into account. On the other hand, there were sufficient studies with a focus on teacher knowledge and teacher education in the wave of educational globalization and in the context of transculturalism. (Howe & Xu, 2013; Howe, 2014; Townsend & Bates, 2014) These studies provided a starting point for our research, especially a perspective of transcultural reciprocal learning.

In this paper, we try to provide some clues to how that transcultural teacher education program affects and reshapes Chinese preservice teachers' TSRs knowledge. And how this kind of experience benefits them in terms of future teaching career, even the whole school education.

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However, our conclusion, that preservice teachers develop their TSRs knowledge through this program, is mainly based on the mean difference analysis, which needs to be tested more broadly by using homogeneous control groups who are also preservice teachers in the same university without participating this program.

Additionally, it is interesting to note that in the interview, there are times when our interviewees struggling with the decision-making process about their understanding of TSRs in the area like what kind of TSRs is welcomed. This indicates that they are not only lacking in expertise in dealing with the significant issues of TSRs, but also are in deficiency of guidance on TSRs in teacher education program. There should be an explicit instruction beyond a cursory introduction to the topic in the teacher education program. Preservice teachers should be prepared with TSRs knowledge in teacher education.

The issues about TSRs deserve more attention in teacher education program and professional development program. (Luce, et al, 2016) Transcultural teacher education program is a great opportunity for preservice teachers to have a better understanding of TSRs in different social and cultural backgrounds. Reflection on the basis of comparison is more of objectiveness and impartiality. And reflection might bring them the experience to deal with issues about TSRs in their future careers.

The findings presented here are based on a three-month reciprocal program with a quite small sample of preservice teachers involved. However, according to the selection criteria and process of the participants of the program, they are relatively typical because they are usually more outstanding compared with their counterparts. But still, the current study is far from being mature. More research is needed in the future. Our future research will mainly focus on the following questions.

1. Teacher knowledge is a narrative construct (Xu & Connelly, 2009) through teachers' totality of life experiences, hence that a closer study should be conducted to inquire into the knowledge development in TSRs during the program by applying more qualitative methods, like informal interview and observation.

2. Control groups are needed to exam the influence of the program.

3. A long-term study of the preservice teachers participating the program should be made to explore the prospective and implicit influence of the program on their knowledge development in TSRs. Namely, put the participants in a three-dimensional life space (Connelly & Clandinin, 2000) including temporal continuum, personal-social continuum and place to detect the process (history) and outcomes of their knowledge development. A more narrative quality is needed for further talk.

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