THE ANALYSIS OF OPPORTUNITIES, BARRIERS, AND PROPOSED STRATEGIES FOR EFFECTIVE PROFESSIONAL LEARNING COMMUNITIES IN CHINESE HIGH SCHOOLS

By

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ABSTRACT

Previous studies show that professional learning communities (PLCs) have a positive effect on teacher professional development (TPD). In order to satisfy requirements of educational reform of National College Entrance Examination and enhance students' development, TPD becomes an urgent issue in China. This study focused on teachers' participation and learning experiences in PLCs. The purposes of this study were 1) to analyze the PLC participation and TPD (learning outcomes) of High School English teachers with different backgrounds; 2) to analyze, compare, and identify factors affecting level of PLC participation and learning outcomes of teachers

with different contexts; 3) to analyze the opportunities and barriers affecting teachers' learning in PLCs and the outcomes; and 4) to propose strategies for enhancing effective PLCs in Chinese high schools. Descriptive research using questionnaires and interview techniques was employed in this study. The samples were 422 Chinese English teachers from high schools in Changchun, Northeast of China. Twenty-seven teachers from 9 selected schools were purposively selected to be interviewed in depth. Data were analyzed through use of statistical and content analyses. Research findings were as follow:

1) On average, the levels of PLC participation and learning outcomes (TPD) of English teachers were moderate.

2) School contexts and teacher background affected the levels of PLC participation and learning outcomes. The school contexts, teaching experiences and PLC participation level accounted for 73.5% of variances in teachers' learning outcomes.

3) Opportunities and barriers that affects teachers' PLC participation and learning outcomes were the ways and types of which teachers worked together in schools.

4) It was found that traditional model of school-based PLCs needed to reform toward a learning organization emphasizing on the teaching and learning.

Key words: Teacher Professional Development; Professional Learning Community; Chinese High School English Teacher; Learning Organization; Educational Reform

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Yang Li

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CHAPTER 1

INTRODUCTION

1.1 Rationale and Background Information of Problem Statement

1.1.1 Teachers' professional development

In order to improve students' academic performances and teachers' teaching efficiency, teachers must pay close attention to their professional learning and development. One side, they need to be immersed in the subjects they teach and have the ability to teach basic knowledge and develop advanced thinking and problem-solving skills for their students. On the other side, they need to adjust their teaching approaches, teaching behaviors in class and expectations to students.

Many factors have contributed to teachers' professional learning and development. However, changes of the magnitude will require a great deal of learning on the part of teachers and will be difficult to make without support and guidance. "This realization has led educational scholars and policy makers to demand professional learning opportunities for teachers-opportunities that will help them enhance their knowledge and develop new instructional practices (Borko, 2004)."

In order to improve teacher's professional learning and development, different models and approaches have been implemented in the past decades. With the

development of teacher education, it has been evidenced that professional learning community (PLC) is an effective way for improving teachers' professional learning and development. The National Commission on Teaching and America's Future contends that "communities of learning must no longer be considered utopian; they must become the building blocks that establish a new foundation for American's schools (DuFour & Eaker, 2005)." Scholars all over the world have discussed and implemented PLCs in the school for years. There are a rich body of literature in different countries describe their conclusions and findings on the relationship between the PLCs and professional development (PD).

According to CNKI (the biggest scholar searching engine of China), this study finds that Chinese scholars have studied the PLCs in schools from a diverse view over a past decade. Scholars in the field of comparative education introduced the concept of PLCs around 2000. After that, researchers have discussed the importance, the approaches, the impacts, the elements, the evaluation of PLCs on articles and dissertations. Based on the previous research, Chinese scholars also support that PLC is a good method for improving teachers' professional development (TPD) (Zhang & Zhu, 2009).

1.1.2 The need of improvement of PLCs in Chinese schools

Chinese schools have a long history of practicing PLCs, though not explicitly stated in such a concept. As early as 1950s, teacher groupings were set up with a top-down approach, in which teachers were mandated to carry out collective lesson planning and inquiry teaching. After a long period of development, collaborative practices have been institutionalized, and a culture of contrived collegiality has gradually been formed, which is characterized by administrative compulsory instead of teacher spontaneous collaboration. In this sense, PLCs in Chinese schools are kind of contrived communities. Accordingly, they not only perform the function of inquiry teaching as professional groups, but also undertake the function of management as administrative organizations.

Specifically, there are three kinds of teacher groupings in Chinese schools that can be understood as the forms of PLCs: Teaching and Research Groups (TRGs, jiao yan zu), Lesson Preparation Groups (LPGs, bei ke zu), and Grade Groups (GGs, nian ji zu).

These three forms of PLCs are parts of the formal structure of Chinese schools, and are pervasive throughout the whole education system of China, whether in affluent urban cities, or most underdeveloped rural areas. Moreover, they are rooted

in the specific Chinese schooling system, especially the Teaching Research System. Under such a system, teachers within the same PLC share one common office, and they are scheduled to spend plenty of time working together. There is also strong support for PLCs in each district, i.e., teaching experts in the district office regularly offer professional guidance for teachers. Besides, quite a lot of schools have established partnership with universities, which promotes the mutual interaction and development between practice and theory. With these external resources, the boundary of PLCs is expanded to introduce new ideas. All these reflect the distinct Chinese schooling context and exert profound impact on the practice of PLCs. Since there are few studies focusing on PLCs in Chinese schools, investigating the characteristics of Chinese PLCs is of vital importance (Zhang & Pang, 2016).

According to Shan (2014), compared to the PLC in western countries, Chinese PLC has unique characters. Firstly, Chinese PLC concentrates on teachers' teaching while PLC in western countries focuses on both teaching and learning. Secondly, Chinese PLC emphasizes collaboration and authority. Teacher, especially for the novice teacher, don't have chances to express their own opinions. However, the PLC in western countries is more flexible, and provide teachers with the same opportunity. Thirdly, Chinese PLC is mostly a part of school's administrative

organization. But PLC in western countries tends to be more like voluntary organization(Shan, 2014).

Niu (2013) finds that few studies have evaluated the PLC's effectiveness. There is a lack of detail description of the rules of the PLCs. This study does not have the knowledge about "how can we establish the most effective form of PLCs? " We lack relevant guidance. Theoretical blurring leads to the breakout of the practice of teachers' PLCs, and the ambiguity of understanding leads to the difficulties of the community in practice(Niu, 2013).

Under the background of educational reform, teacher professional development (TPD) becomes an emerging issue in the education field while the traditional Chinese PLCs can't solve the problem effectively. Therefore, schools and teachers both need to adjust strategies for developing the PLCs in China.

In recent few years, the research results of TPD are remarkable, which greatly enhances the effectiveness of education administration and teacher training. It points out the developing path for teachers' personal growth, and provides effective guidance for teachers' career design: the Construction and Perfection of Teacher Education Model. However, most of the researches on TPD in China are based on group norms and social external standards, which tends to describe the development

of teachers' actual experience or presentation, lack of guidance to specific related subjects, case study and demonstration stage of teachers' growth. The internal mechanism of individual development and change is not well explained, and there are few systematic researches on the factors influencing the growth of teachers and how to promote their growth for different individuals. The teacher's development is the ultimate goal of TPD, and it has not been further studied after the maturation of teacher's development. Therefore, < The English Curriculum Standards for High School English Teacher > establishes a more complete high school English teachers professional content system, and the construction of high school English disciplines of TPD offers a practice mode for educational institutions, principals and teachers, and it also provides reference for the system, the birth of a new and multi-faceted TPD paradigm for high school English teachers. It provides a theoretical basis for TPD and also enriches the professional development of teachers.

PLCs offer formal structures to provide teachers with learning-enriched, ongoing, job-embedded staff development. The conceptual framework for this study is rooted in the guiding principles of organizational learning and effective TPD practices. The purpose of this study is to describe the types of PLCs which are using as a kind of TPD strategies in Chinese high schools, to investigate PLCs impacts of

teachers' professional development in Chinese high school, and to analyze teachers' experienced opportunities and barriers for improving their own professional development, and to discuss the responses of PLCs in solving individual teacher's barriers on TPD. The study seeks to examine Chinese high school teachers' experienced opportunities and barriers in improving their professional development. To accomplish this purpose, a multi-site case study will be conducted at different school sites all within the same region in one Chinese city. Questionnaire and qualitative research methods, including interviews, and review of documents were utilized to analyze, contrast, and compare perceptions, beliefs, and assumptions of the participants in the study. The participants include teachers, leaders of PLCs, and organizers of PLCs. This study seeks to better understand the implementation of an organizational systemic knowledge transfer structure and the impact on teacher practice from the participants' perception. The research design provided thick and rich data, which offered in-depth understandings of the participants' perception, beliefs and assumption about the PLCs' impact on TPD.

A changing view of learning and teaching has been prevalent around the world with a greater emphasis on social and constructivist dimensions. In line with such a global trend, China has taken the initiative to introduce large-scale curriculum

reform to provide quality education. Instead of merely transmitting a fixed body of knowledge, new curricula stresses the importance of integrating "knowledge and skills", "process and method" as well as "emotions, attitudes, and values". To make the curriculum reform successful, teacher professional learning is seen as crucial. Sustainable curriculum reform requires the empowerment of teachers to re-examine professional identities and develop professional expertise. Teachers need to reflect on their educational beliefs, grapple with their own vision of the curriculum change and develop the ability to actualize it in their own practices. "Reflective teaching" and "research-based teaching" have thus been promoted.

One of the most commonly adopted ways in China to help the large number of present teachers to understand and interpret the new curricula is through in-service teacher education. This has traditionally been mainly lecture-centered, theory-orientated, and experience-led. However, such an approach, now for various reasons, is seen to be not very effective. First, with advances in understanding about what is best professional learning, teachers might not be so willing to receive new ideas that they hear during lectures in the reality. They are reluctant to accept information that is inconsistent with their pre-existing knowledge or beliefs, tending only to accept information that is compatible with their existing knowledge base.

More importantly, teachers often seem unwilling even to modify the new information to fit it into their existing cognitive frameworks, which makes it very difficult for them to assimilate new knowledge. Second, even if teachers are receptive to the new information, they may not know how to apply it. Teacher professional knowledge is tacit, personal, and situated. Thus, most teachers find it difficult to apply the various types of educational knowledge and pedagogical skills that they have heard about at in-service learning programs delivered through the lecture mode. This gap between knowing and acting is a key problem that needs to be tackled (Gu & Wang, 2006).

The previous researches and experiences have taught us that widespread, sustained implementation of new practices in classrooms, principal's offices, and central offices requires a new form of TPD. This TPD not only must affect the knowledge, attitudes, and practices of individual teachers, administrators, and other school employees, but it also must alter the cultures and structures of organization (Sparks & Hirsh, 2000). This research supports Villegas-Reimers, TPD is a lifelong process which begins with the initial preparation that teachers receive (whether at an institute of teacher education or actually on the job and continues until retirement (Villegas-Reimers, 2003).

Based on this background, this research concentrated on the stage after

teachers entering in school, i.e. the activities and learning experiences enhancing teachers' practices and professionalism in the working place. The researcher assumes that after a long period implementation, the PLCs should be improved in China. It has obtained the characteristics, which is similar to the western PLCs.

1.2 Research questions

The proposed study focused on the following research questions:

1) What types of PLC most English teacher participate in? Are there any differences among school contexts and teachers' background?

2) On average, what is the average level of PLC participation of English teachers? How do English teachers participate in PLCs according to PLC attributes?

3) On average, what is the average level of TPD (learning outcomes) from PLC participation?

4) How school contexts and teacher background explained teachers' PLC participation and their learning outcomes? What are the influential factors on TPD (learning outcomes)?

5) What are the opportunities and barriers affecting teachers' learning in PLCs and their learning outcomes?

6) What would be the appropriate strategies for enhancing effective PLC for English teachers in Chinese high schools?

1.3 Purposes of the study

The research objectives are divided into four aspects as follows:

1) To analyze the PLC participation and TPD (learning outcomes) of High School English teachers with different backgrounds;

2) To analyze, compare, and identify factors affecting level of PLC participation and learning outcomes of teachers with different contexts.

3) To analyze the opportunities and barriers affecting teachings' learning in PLCs and the outcomes.

4) To propose strategies for enhancing effective PLCs in Chinese high schools.

1.4 Scope of the study

In this research, PLC is a group of English educators that meets regularly, shares expertise, and works collaboratively to improve professional development and the academic performance of students. The study focused only English teacher because the Chinese high school education as one part of the secondary education has

not been included into the free education. Students and parents need to pay for it. Upper secondary education is the only way to lead to the higher education in China. Hence, the high schools face seriously competition for helping the students to transfer to the university. These elements make the high schools distinguishing to the elementary and middle schools and the culture contexts of PLCs in high schools and elementary schools are different. Regarding these factors, this research purely focused research interests on the English teachers in the Chinese high schools because English is one of the major subjects influencing the capacity of students to enter universities. Apart from that，students have two chances for English section and the better grade will be accepted in the new national college entrance exam system. PLC for English Teachers in high schools is the process for TPD to help students learn.

According to Hord (2004), Professional Learning Communities consists of 5 attributes. They are supportive and shared leadership, collective creativity, shared values and vision, supportive conditions, and shared personal practice. Based on data cleaning and preparation for analysis, “supportive conditions” attribute was deleted from the study with the reason that most responses were missing in these items. It seemed that the “supportive conditions” in Chinese schools might be constant (fixed variable).

1.5 Definition of the terms

Teacher Professional Development (TPD) means the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically in this research.

Professional Learning Community (PLC) means a group of educators that meets regularly, shares expertise, and works collaboratively to improve professional development and the academic performance of students. Compared to other research, the PLCs in this research include all the professional learning communities in virtual and reality, inside and outside schools, school-based and research-based.

Effective PLC means the level of teachers' participation and learning in PLC as defined by the 4 attributes of PLC: supportive and shared leadership, collective creativity, shared values and vision, shared personal practice. The level of participation was classified into three groups: low, medium, high.

1.6 Significances of the study

1) This study enriches the Chinese cases in the field of teacher education. The four attributes: supportive and shared leadership, collective creativity, shared values and vision, shared personal practice of the PLCs are still valid in the Chinese

context.

2) Most of the previous studies focus on the overall PLCs. This study is relatively more extensive in the category of PLCs, and has a more accurate grasp of the current situation of TPLCs in Chinese high schools.

3) Feasible suggestions of improving TPD from the needs of teachers are summed up. How teachers utilize resources in the effective PLCs to improve TPD was investigated and the most practical strategies for TPD were summarized.

CHAPTER 2

LITERATURE REVIEW

The content in this chapter consists of 9 sections: 1) definition of TPD, 2) definition of PLC, 3) attributes of PLC, 4) influential factors on effective PLCs, 5) teachers' learning opportunities in PLCs, 6) teachers' learning barriers in PLCs, 7) PLC's strategies for TPD, 8) synthesis of the literature reviews, and 9) research framework. Details are as follows.

2.1 Definition of TPD

Professional development, in a broad sense, refers to the development of a person in his or her professional role. More specifically, "Teacher's development is the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically" (Glatthorn, 1995).

In general, scholars support that professional development includes both formal experiences (such as attending workshops and professional meetings, mentoring) and informal experiences (such as reading professional publications, watching television documentaries related to an academic discipline, etc.) (Ganser, 2000). This conception of professional development is, therefore, border than career

development, which is defined as “the growth that occurs as the teacher moves through the professional career cycle” and broader than staff development, which is “the provision of organized in-service programs designed to foster the growth of groups of teachers; it is only one of the systematic interventions that can be used for teacher’s development (Glatthorn, 1995)”. When looking at professional development, it is perceived as a process that takes place within a particular context and is conceived of as a collaborative process. The most effective form of professional development is that which is based in schools and is related to the daily activities of teachers and learners with meaningful interactions. A teacher is conceived of as a reflective practitioner, someone who enters the profession with a certain knowledge base, and who will acquire new knowledge and experiences based on that prior knowledge. In so doing, the role of TPD is to aid teachers in building new pedagogical theories and practices, and to help them develop their expertise in the field. Therefore, most effective TPD occurs when there are, not only among teachers themselves, but also between teachers, administrators, parents and other community members.

The new conception of TPD has a significant positive effect on the

educational field all over the world. Many countries have invested the TPD program. The government, schools and teachers have paid more attention to the TPD. They have implemented many research-based or school-based programs. According to their implementations and studies, it has been evidenced that TPD has a close relationship to schools, teachers and students' development. At first, individual satisfaction and financial gain that teachers may obtain as a result of participating in professional development opportunities. Secondly, the process of professional development has a significant positive impact on teachers' beliefs and practices, students' learning, and on the implementation of educational reforms.

The research of teacher education and TPD provides the fundamental research and theoretical framework for different subjects' TPD, such as math, science, and English. This study also starts from the TPD in general. Then we discuss the detailed information about high school English teacher professional development (ETPD).

2.2 Definition of PLC

There is no universal definition of a PLC. PLC may have shades of interpretation in different contexts, but there appears to be broad international consensus that it suggests a group of people sharing and critically interrogating their

practice in an ongoing, reflective, collaborative, inclusive learning oriented, growth promoting way; operating as a collective enterprise. Summarizing the literature, Hord blends process and anticipated outcomes in defining a "professional community of learners" as one: "in which the teachers in a school and its administrators continuously seek and share learning, and act on their learning. The goal of their actions is to enhance their effectiveness as professionals for the students' benefits: thus, this arrangement may also be termed communities of continuous inquiry and improvement." The notion, therefore, draws attention to the potential that a range of people based inside and outside a school can mutually enhance each other's and pupils' learning as well as school development (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006).

Other considerations when building and implementing PLCs include characteristics such as description and various elements that will exist within the communities. Roberts and Pruitt cite the work of Roland Barth, who in 1990 defined a learning community as "A place where students and adults alike are engaged as active learners in matters of special importance to them and where everyone is thereby encouraging everyone else's learning" (Roberts & Pruitt, 2009).

2.3 Attributes of PLC

Richard DuFour, who leads his school (Adlai Stevenson High School) to become the model school of United States during the school reform, made Stevenson became the best practices of PLCs in education. He found that there were six characteristics of PLCs: shared mission, vision, and values; collective inquiry; collaborative team; action orientation and experimentation; continuous improvement; results orientation (Eaker & DuFour, 1998).

Shared mission, vision, and values means that "the sine qua non of a learning community is sharing understanding and common values." Collective inquiry is the engine of improvement, growth, and renewal in a PLC. Collaborative team is the basic structure of the PLC and a group of collaborative teams that share a common purpose. Action orientation and experimentation means that PLCs are action oriented. Continuous improvement, that is, a persistent discomfort with the status quo and a constant search for a better way characterize the heart of a PLC. In short, becoming a learning community is less like getting in shape than staying in shape---it is not a fad diet, but a never-ending commitment to an essential, vital way of life. Results orientation means a PLC realizes that its efforts focus on continuous improvement must be assessed on the basis of results rather than intentions (Eaker & DuFour,

1998).

After summarizing other scholars' researches, the research of Stoll, Bolam, Mcmahon *et al.* agree that PLCs appear to share five key characteristics or features, which also appear to be intertwined, operating together. These are "shared values and vision", "collective responsibility", "reflective professional inquiry", "collaboration", "group, as well as individual, learning is promoted". Their research broadly confirms these five characteristics, also identifying three others: mutual trust, respect and support among staff members; inclusive membership – the community extending beyond teachers and school leaders to support staff, and it being a school-wide community rather than consisting of smaller groups of staff; and openness, networks and partnerships looking beyond the school for sources of learning and ideas (Bolam *et al.*, 2005; Stoll *et al.*, 2006).

Shirley M. Hord, the author of <Learning Together, Leading Together: Changing Schools through Professional Learning Communities>, <Leading professional learning communities: Voices from research and practice>, has done many researches in the field of PLCs for years. In the book of <Learning Together, Leading Together: Changing Schools through Professional Learning Communities>, they organized the characteristics of PLCs into five attributes.

These are supportive and shared leadership requiring the collegial and facilitative participation of the principal who shares leadership, power and authority by inviting staff input and action in decision-making; collective creativity requires that school staff at all levels are engaged in processes that collectively seek new knowledge among staff and application of the learning to solutions that address students' needs; shared values and vision include an unswerving commitment to students' learning that is consistently articulated and referenced in the staff's work; supportive conditions include physical conditions and human capacities that encourage and sustain a collegial atmosphere and collective learning; shared personal practice involves the review of a teacher's behavior by colleagues and includes feedback and assistance activity to support individual and community improvement. These attributes are not isolated, but are intertwined. Each attribute affects the others in a variety of ways (Hord, 2004).

From different perspective, scholars have used distinguish terms to summarize the characteristics of PLCs. This study agrees that these characteristics are important to PLCs. In our research, we follow Hord's conclusions and develop the core concepts for the future research. While, in the unique Chinese context, we assume that PLC's attribute mentioned above might have different definitions or

meanings. In the questionnaire, based on the international research, it included the research findings that had been evidenced. On the other hand, we designed some questions to explore the potential divergence between the Chinese PLCs and western PLCs.

2.4 Influential factors on effective PLC

It has been evidenced by the scholars that supportive and shared leadership; collective creativity; shared values and vision; supportive conditions and shared personal practice are the core indicators of building a PLC.

While the issue of how these elements have effect on the professional learning activities and teachers in different context of PLC and how does a PLC could effectively influence teachers' learning remains unclear. Recent studies also argue that the concept of PLC requires a reexamination, more especially since, in enacting new initiatives, schools tend towards de-problematization through what might be termed pedagogisation, the processing of complex concepts for consumption by learners (Watson, 2010). Researchers in the world have conducted various studies in reality to examine these influence factors.

2.4.1 Supportive and shared leadership

Because of the different development stage of PLC, the influence factors for an effective PLC may vary from one stage to the other stage.

At the beginning of a PLC, the most important influence factor is the supportive and shared leadership. Clausen *et al.* examine a small Canadian school's initial attempt at promoting a ''learning community'' approach and compares it to the ideals of collaborative teamwork set out by recent scholarship. Their findings suggest that collegiality holds promise for change in teachers' practice and meaningful professional development if the school's administrator accepts the learning community philosophy and is willing to take the lead in initiating the reform (Clausen, Aquino, & Wideman, 2009).

Wyler (2008) conducted a research to describe and compare the staff's perception of PLCs and the impact on student achievement in a rural Georgia school system. The findings indicated that shared Leadership was significantly correlated to the learning community rating and with the leadership team rating from the Georgia Assessment of the Performance of School Standards Analysis. Leadership is crucial in establishing and sustaining a PLC.

2.4.2 Collective creativity

Zhang and Pang (2016) followed implications for the practices of PLCs in

schools of Shanghai and Mianyang. To promote the development of PLCs in schools of Shanghai or in other cities, one of the most effective strategies is to raise school principals' and teachers' awareness of the importance and functions of collaborative learning. In the process of building PLCs in Chinese schools, principals need to enhance communication among teachers, understand their learning needs, provide guidance and help to improve teacher learning, and share power and responsibility with teachers. More importantly, principals of Shanghai schools should help to create a culture of collaboration rather than a culture of competition.

The other influence factor is the technology advantage; virtual PLC becomes a new approach to expand the teachers' learning at some degree. Richard Beach designs an online PLC for the teacher, after the experiment. He draws the conclusions that, creating an effective online PLC certainly requires more than simply sharing work online. It also requires extensive face-to-face social interaction complemented by the use of digital tools to do meaningful and important social work. All of this reflects the research on technology integration—what's important is not the digital tools per se, but how digital tools are being used to foster learning. In this case, the use of digital tools in online PLCs can improve the quality of teaching and learning (Beach, 2012).

Vescio *et al.* (2008) review the impact of PLCs on teaching practice and student learning, they suggest that well-developed PLCs have positive impact on both teaching practice and student achievement. Implications of this research and suggestions for next steps in the efforts to document the impact of PLCs on teaching and learning are included. They stress 'clear and consistent focus on student learning' and reflective dialogue, which leads to 'extensive and continuing conversations among teachers about curriculum, instruction and student development. In addition, this research refers to PLCs as 'deprivatizing' teaching through making it a more public activity. Openness is one of those core concepts that suggest niceness but it may also be a form of increased surveillance, a pervasive feature of schools and other work places today.

2.4.3 Shared personal practice

Wong (2010) uses the perspective of learning organization in relation to the idea of professional learning community to examine and view how experienced teachers in China re-construct their pedagogical knowledge and skills with teamwork and support from colleagues. From the experience of Mathematics department studied, Shared goals and a strong commitment to shared personal practice seem to be vital for the development of an effective professional learning community.

Chow and Chan (2008) examine influence of social capital on organizational knowledge sharing. Their research results revealed that: 1) organizational members did not distinguish tacit from explicit knowledge when they shared knowledge, 2) a social network and shared goals significantly contributed to attitudes toward knowledge sharing, 3) a social network and shared goals significantly contributed to the subjective norm on knowledge sharing; 4) social trust had no direct contribution to either attitudes toward knowledge sharing or its subjective norm though it influenced both attitude toward knowledge sharing and the intention to share knowledge; and 5) a social network and shared goals have indirect effects on the intention to share knowledge within the organization.

Management must develop a clear mission and goal so that everyone in the organization can appreciate and contribute knowledge. Recruiting employees who share common interests and goals is a critical task for human resources departments. Social ties between colleagues are important and a good relationship will enhance knowledge-sharing behavior.

2.4.4 Teachers' background

Teachers as the most important part of PLCs, their backgrounds have a great effect on the efficiency of PLCs.

First, the teacher' teaching experiences. Lieberman *et al.* research illustrates that accomplishment of these goals can come about at different stages of a teaching. It is not age that earns teachers their 'stripes' as a teacher and leader, but rather their ability to look deeply at practice, unwrap its complexity and in the process become articulate about what it means to 'go public' with what they have learned (Lieberman & Mace, 2009). Enhancing collaborative learning among teachers and utilizing their analytical abilities on their teaching practices are keys to their professional learning (Gu & Wang, 2006).

Second, pre-service training has a positive effect on their in-service professional development. Perseverance and agency should be further emphasized by teacher trainers and administrators in novice teachers' development so that the direction of the change of their professional identities can be more effectively and positively guided (Xu, 2013).

Third, teacher's gender is also important. For the usage of teaching methods, female teachers are significantly more likely to report the use of drill, small-group work, memorization and recitation, role play, and games; to have the students respond individually to questions; and to find answers in the text (Sargent, 2014).

Fourth, education level plays a pivotal role in effective PLCs. Teachers with higher levels of education may be more likely to use innovative teaching methods as a result of their potentially greater exposure to education theory and philosophies (Sargent, 2014).

2.4.5 School context factors

Except the elements mentioned above, school context influences also act as an important role in effective PLCs.

School size plays an important role in structuring a workplace's social dynamics, supporting better communication flow and greater face-to-face interaction (Stoll *et al.*, 2006).

School reputation and resources have been given more attention by the scholars. The teachers in Mianyang (less-developed city) perceived themselves having better development of PLCs than the teachers in Shanghai (more developed city), mainly in terms of collaborative learning and facilitative leadership (Zhang & Pang, 2016). Teachers in schools with more library books, however, are significantly more likely to report the use of role play, games, hands-on activities, and to encourage student self-expression (Sargent, 2014).

In this research, these elements will be investigated in the Chinese context

and be examined one by one with the case studies. The main content and questions of quantitative research came from the conclusions of this table. First, all the elements of evidencing elements had been discussed with academic people and English teachers. Then, the researcher identified and added more influence factors in the final questionnaire.

2.5 Teachers' learning opportunities in PLCs

The previous study has showed different approaches of providing the learning opportunities for in-service teachers. It is divided into four types.

2.5.1 School-based PLCs

According to previous studies, school-based PLCs had been developed into three basic forms after decades' development.

Teaching Research Groups (TRGs) which aims to improve classroom teaching via teachers' collective work. Regular activities organized by TRGs include collectively learning new theories and educational policies, joint lesson planning, collective observations of open lessons with post-lesson discussions, peer observation and peer coaching, and conducting action research projects. To a large extent, these activities have been incorporated into teachers' daily work, and thus forming a community with ample significant opportunities for professional development (Wang

2008).

Collective Lesson Preparation Groups (CLPGs) are the second form of PLCs commonly found in large schools. They are made up of teachers of the same subject and in the same grade. That is to say, each TRG is composed of various CLPGs at different grade levels (Wang, 2008).

The third form of PLCs is Grade Groups (GGs), which consist of teachers of different subjects from a same grade. They meet regularly to discuss not only on students' academic performance, but also on their developmental needs in terms of moral, physical, social and aesthetic aspects, with a purpose of promoting students' holistic development (Wang 2008).

These three forms of PLCs are parts of the formal structure of Chinese schools, and are pervasive throughout the whole education system of China, whether in most affluent urban cities, or most underdeveloped rural areas (Sargent and Hannum, 2009).

More importantly, they are rooted in the specific Chinese schooling system, especially the Teaching Research System (Jiaoyan Xitong). Under such a system, teachers within the same PLC share a common office, and they are scheduled to spend plenty of time working together. There is also strong district support for PLCs, i.e.,

expert teachers in the district office regularly offer professional guidance for teachers (Tsui and Wong, 2009).

School-based PLCs allow teachers to obtain opportunities to share and discuss their practice and co-construct their knowledge about teaching and learning.

2.5.2 Regional-based PLCs

Generally, the local education department of China leads education affairs in each region. The local education department has the obligation to supervise and organize the educational reform and development activities in one region (Wong, 2010). In particular, they need to balance the resources between different schools. In this decade, aiming at promoting the equality and justice in education, China has made an effort to improve the teaching quality of resources-constrained schools.

One effective method is the cooperation among different schools in one region. The rich-resources schools offer help to the resources-constrained schools. Or all the schools collaborate with each other on one specifically educational issue. The teacher studio is created during this process.

Teacher studio, as a typical sample, stands out in the process of long-term focus on primary and secondary school teachers' professional development. With the help of the distinguished teacher’s own valuable resources, Teacher studio plays its

radiation and leading role in the region and motivates a good number of teachers' professional development. Under distinguished teacher's persuasion, the studio members interact with each other and get a constantly understanding of the pain and joy of growth (Han & Yu, 2014).

To a certain extent, it is not Teacher Studio promotes the TPD, but the teachers themselves make great effort to promote TPD level. The essence of Teacher Studio is the process of TPD and collaborative innovation of teachers' education and is an important and inevitable form in the process of TPD (Shuang Han, 2015).

Regional-based PLCs emphasizes the collective learning and working between teachers in one academic zone. It enables teachers to think and work with "new" teachers outside of their own schools.

2.5.3 Virtual-based PLCs

With the development of Internet, virtual and online PLCs or distance education has become an important approach to improve TPD. Higher education institutions, department of education, and some expert teachers have made contribution to develop the virtual PLCs recently.

Robinson's study describes how distance education and ICT improved access, equity, and quality in professional development for rural teachers in one

province in western China, viewed through the lens of a ‘rights-based’ framework. Though distance education and ICT have the capacity for large-scale delivery over huge distances, the main benefit came from what happened beyond delivery, namely, the mobilization of teachers, the generation of activities at the TLRC and local level, and the changes in knowledge, skills, attitudes, and mindset of teachers and head-teachers (Robinson, 2008).

Hou’s research brings to the fore a cohort of student teachers' perceptions of an online learning experience during school placement in a Chinese tertiary institution, it explores factors contributing positively to online professional learning and the development of the community. Findings indicate that online communication allows participants to recognize the significant presence of others in supporting and transforming their learning. It also fosters an appreciation and embracement of the multidimensional roles that they take on. Voluntary participation and empowerment emerge as key factors making this a vibrant professional community for professional growth (Hou, 2015).

To date, while most of the existing literature on PLCs has focused on Western settings, the concept and practice of PLCs in Asian contexts, particularly China, have largely been ignored. In fact, working together is not new to Chinese

teachers, teacher organization like the Teaching Research Group has existed in Chinese schools for decades (J. Zhang, Yuan, & Yu, 2017). Previous studies (e.g., Shan, 2014) have found that these groups share the similar features and functions with PLCs in western contexts on the one hand. On the other hand, they exhibit their own distinctive characteristics that are influenced by the Chinese educational systems (featured by top-down management with an emphasis on command and control) and socio-cultural factors (such as collectivism) (Chen, 2006).

Virtual-based PLCs expand teachers' learning and chatting opportunities to the unlimited space and unlimited time. Teachers able to communicate with each other online, even with teachers and scholars outside the China.

2.5.4 University-based PLCs

Over the last decade, Chinese Higher Education Institutions (CHEIs) have been given support to set up pre-service teacher education programs in order to 'ameliorate the problems of quantity and quality with the teaching force' (He & Lin, 2013).

First, the cooperation between the university and secondary schools for training the student teachers is one kind of university-based PLCs. The university and schools treasure the learning to teach approach. In consequences, the

school-university partnership becomes a generally teaching program in Chinese university, especially for the schools who aim at training teachers. School-university partnership may cooperate with each other in different aspects, such as training student teachers, continuation education for mutual teachers, and different types educational reform (He & Lin, 2013).

Second, there is a tendency that universities and schools begin to collaborate with each other to do the academic research. Wong's research in Shanghai elaborates the PLCs' case in a Mathematics department. Its PLC obtains a better development after cooperate with the Shanghai Academy of Educational Sciences (Wong, 2010).

University-based PLCs focus on the academic activities. First, it provides scholars from the university with the opportunity to combine the latest educational theory and teachers' practices. Second, it offers the teachers to learn new pedagogical knowledge and new teaching methods.

In sum, government and schools in China had worked together to provide teachers with multi-approaches of professional learning. However, how do these learning opportunities have actual influences need further investigation?

2.6 Teachers' learning barriers in PLCs

The various approaches of developing teachers' professional learning has been mentioned above. The schools and teachers had used these solutions for a long time. "How did these PLCs' learning opportunities had been used by schools and teachers" needs more illustration. In this section, the researcher tracked the learning barriers in those PLCs.

2.6.1 Collective cultural tradition's side effects

After examine the characteristics of the PLCs in Shanghai by mixed-method study, Zhang and Pang (2016) reveal that cultural barriers, especially those negative cultural traditions such as respecting the authority and conflict prevention that result in unfavorable interpersonal relations and superficial collaborative cultures.

Redding and Wong (2010) also point out that Chinese collectivism culture encourages achievement-oriented practices through co-operation and mutual dependence, all of which result in an increase of interdependence among members in the community. The Chinese type of socialization results in a dependence-emphasizing society with a strong sense of collectivism.

2.6.2 Lack of supporting conditions

Lacking time and continuous financial supporting are the biggest practical

barriers for the substantial effective building of PLCs.

Because of the national college entrance examination (NCEE), the college admission rate, namely, students' scores in NCEE became a fix standard of teachers' teaching proficiency for a long time. Both high schools and teachers felt many pressures about it. This standard examination caused teachers do not have enough time to improve their professional development on the one hand. On the other hand, to date, there is a tendency in the Chinese high schools that schools emphasized more about final scores rather than students' long-term development. This tendency resulted in teachers spend more time on training students' examination ability instead of students' English proficiency. English teachers might pay more attention on improving students' scores, they might ignore to expand their own "language bank" and to enlarge their own literacy. All these barriers had been discussed with teachers.

Barriers to the implementation of PLCs include lack of shared meeting time and a shortage of teachers who share the same subject areas or common goals and interests. Convening teachers from multiple districts can alleviate this problem, but teachers are reluctant to travel for meetings due to time and cost restraints (McConnell, Parker, Eberhardt, Koehler, & Lundeberg, 2013).

Given severe time constraints in schools due to teacher workload (Rhodes

& Houghton-Hill, 2000), management teams in schools will need to consider the creation of sufficient time to allow the coach-mentor to undertake their role.

Yoon *et al.* identified that TPD is more likely to be effective when given in the continuous TPD activities. While the cost of developing and delivering TPD grows proportionally with the number of days involved, and requiring teachers to be out of the classroom on regular school days is disruptive to student learning (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007).

2.6.3 Ineffective professional development activities

McConnell *et al.* research finds that most professional development is offered as short-duration workshops that are not effective in changing practice. Barriers to the implementation of PLCs include lack of shared meeting time and a shortage of teachers who share the same subject areas or common goals and interests. Convening teachers from multiple districts can alleviate this problem, but teachers are reluctant to travel for meetings due to time and cost restraints (McConnell *et al.*, 2013).

Sato and Kleinsasser (2004) yearlong study revealed English as a Foreign Language teachers lacked many teachers' learning opportunities in the sample school. This school was a lack of communication regarding instructional issues, per se that

kept teachers from discussing in depth any substantive teaching issues or collaborating with each other on various curriculum issues. As a result, these teachers did not provide evidence that they created or involved either themselves or their students in innovative instructional activities.

Although much attention has been paid to the needs of staff charged with mentoring newly qualified teachers (Hayes, 2013), there is little training to guide the work of the coach or mentor working to support the learning of the more experienced within schools (Harris, 2000). It is important to recognize that this consensus—although it has endured for more than a decade—lacks sufficient specificity to guide practice (Wayne, Yoon, Zhu, Cronen, & Garet, 2008).

2.6.4 Uncertainty contextual barriers of knowledge sharing

Knowledge sharing is an important element of collective learning and share practice. While many studies have evidenced that knowledge sharing has faced many challenges.

Some members discontinue their use of PVC because they find it difficult to perform these activities due to the poor quality of the website. After a period of participation, a member may disconfirm prior expectation of his centrality in the network, and form post-usage expectations on how centrally he can be embedded in

the network of PVC if he continues to participate. Also, such disconfirmation will diminish his satisfaction with prior use of the PVC's website (Chen, 2007).

Many teachers have learned that it is sometimes best not to trouble their lived classroom experiences or first-hand observations because to do so may mean an admittance of failure to implement curriculum as directed. In fact, the transmissive culture of many schools has demonstrated that teachers can suffer punitive repercussions from highlighting areas that teachers themselves identify as problematic (Dana, Silva, & Snow-Gerono, 2002).

In consequence, even though PLC is regarded as an effective strategy for improving TPD. With its development, some new barriers emerged from. Scholars made an effort to solve it in the past decades. The next section collected information of the PLC's methods to deal with those problems.

2.7 PLC's strategies for TPD

There are diversity strategies to improve TPD. First, the researcher reviewed the approaches in PLC lens. In this part, all the PLCs' solutions of developing its members' professional developments had been summarized. Second, in the next section, individual teachers' approaches of advancing their professional developments had been collected.

2.7.1 Improving collaboration learning between the members in PLCs

Adam (2011) gave the evidence that TPD for preschool teachers indicates that coaches can have a positive impact on helping preschool teachers address the challenges they face. Specially, coaches can provide timely and focused feedback, enable teachers to develop skills to self-regulate their learning, and support teachers to become more mindful practitioners. In these roles, coaches can facilitate a shaft in teacher's practice paradigm to accommodate current accountability expectations. This study discusses in terms of the interrelationships between coaching strategies and changes in teachers' thinking and behaviors, and the power of coaching conversations to support preschool teachers' success serving children in this era of accountability.

Rhodes and Beneicke's research supports that the coaching, mentoring and peer-networking mechanisms show an increasing trend in the schools of United Kingdom and Holland (Rhodes & Beneicke, 2002).

Reflection is viewed as the cornerstone of TPD as it is prerequisite to recognize and change routine behavior. Unlearning routines is a first step in changing practices, and thus in improving the quality of teaching and education. Although it is stressed that the object of this reflection is to address teachers' own way of teaching,

the act of reflection is regarded as connected to the availability of feedback that may spring from different sources within the work environment.

According to Glazer, Abbot and Harris (2004) collaborative reflection helps teachers to improve their practice as professionals, and discover and develop their unique professional stances. In other words, it provides teachers with the opportunity to be able to join learning with teaching, since it is a good example of learners working with one another collaboratively and cooperatively to resolve problems and address issues that arise during the typical school day.

2.7.2 Improving professional development activities in PLC

One important tactic for PLC to advance TPD is building the longer-term professional development activities instead of the short duration activities. Current studies have evidenced that the teachers tend to absent the short-time professional development activities while the longitudinal professional development activities offers teachers with substantial opportunities to develop TPD.

According to Boyle *et al*. research in a longitudinal study of teacher change in the UK. “The research reports on participants’ changes in type of professional development activity over time, extent of subject content emphasis of the development activity and subsequent changes to teaching practice effected by

involvement in a longer term professional development activity (Boyle, Lamprianou, & Boyle, 2005)."

It is generally accepted that intensive, sustained, job-embedded professional development focused on the content of the subject that teachers teach is more likely to improve teacher knowledge, classroom instruction, and student achievement (Wayne *et al.*, 2008). Apart from that, in the longitudinal study, Laura *et al.* found that TPD focused on specific teaching practices increased teachers' use of those practices in the classroom. For example, math and science, TPD is more effective in changing teachers' classroom practice when it has collective participation of teachers from the same school, department, or grade (Desimone, Porter, Garet, Yoon, & Birman, 2002). In a review of the Mathematics Case Methods Project, Barnett (1998) concluded that teacher-authored cases can be a powerful tool to discuss content-related, pedagogical and philosophical issues in groups of teachers and university-based facilitators (Barnett, 1998).

Van Driel and Berry's research implies that professional development programs aimed at the development of teachers' pedagogical content knowledge cannot be limited to supplying teachers with input, such as examples of expert teaching of subject matter. Instead, such programs should be closely aligned to

teachers' professional practice and, in addition to providing teachers with specific input, should include opportunities to enact certain instructional strategies and to reflect, individually and collectively, on their experiences (Driel & Berry, 2012).

2.7.3 Utilizing the internet resources

With the development of Internet and digital, education has progressed to a new era. Scholars tried to explore a better way to support TPD.

Video-conferencing software offers a solution to the distance and space barriers while serving to foster the sense of community needed for PLCs to be effective. McConnell at al findings suggest that teachers perceive video conferencing as an effective tool for facilitating PLCs when distance and time are practical barriers to face-to-face meetings (McConnell *et al.*, 2013).

In sum, TPD cannot achieve a better outcome without a broad network. Both the PLCs based on the schools and universities need to bridge the internal resources with external resources. There are various approaches to build the connections. The cooperation between the post-secondary schools and the universities is the more popular strategy to utilize the internal and external resources. Regional cooperation in different schools is other way to accumulate the resources in one zone. Good PLCs have one thousand ways to help teachers improving their professional

development. Since there are few studies focusing on PLCs in Chinese schools, exploring the strategies of Chinese PLCs is of vital importance. The main aim of this research is trying to explore some general approaches suitable for the Chinese high school teachers.

2.8 Synthesis of the literature reviews

The review of the literature was completed in the United States of America and China, and even though special emphasis was placed on searching as many international databases and publications as possible, I am aware that my geographical location may have limited the literature to which I had access. I did find an over-representation of cases, models and experiences in the USA, and European countries, compare to that which I found concerning countries in other countries in Asia, the Middle East and Latin America. The language of the publications also restricted me, as I was only able to review documents written in English and Chinese.

According to the review of the literatures, it has been evidenced that there is a close relationship between the TPD and PLCs. However, PLCs are a means to an end: the goal is not to be a PLC. A key purpose of PLCs is to enhance staff effectiveness as professionals, for the ultimate benefit of students.

In a detailed study of interaction between teachers in their daily course of

work, little reflected that: ‘‘this is a timely moment to unpack the meaning and consequences of professional community at the level of practice’’. This literature review and, indeed, the research in England conclude that building PLCs is by no means easy. A number of subtle as well as more overt processes require work, and there are influences, both within and external to schools that can either facilitate or severely inhibit the process. Nonetheless, it also demonstrates that PLCs appear to be worth the considerable effort put in to creating and developing them, although there is still much more to learn about sustainability. Because every educational setting was unique, these differences were well thought-out when developing, implementing, and maintaining PLCs. In order to create a learning environment for everyone, teachers and administrators kept their focus on learning; priorities were identified and clarified, current teaching practices and procedures were examined; teachers began to collaborate with each other; and they embraced an unwavering commitment to continuous improvement. PLCs are not a silver bullet nor are they a short cut to school improvement.

There are a number of recommendations that emerge from this review of the literature. The kinds of TPD programs and activities designed by and for teachers must respond to their professional needs, their personal and professional interests, the

stage of TPD attained at that particular time, and the stage of the education system in force in their place of work. Schools, teacher-preparation institutions, and other related institutions must work collaboratively in order to ensure the development of teachers from the very beginning of their careers. Programs of TPD must be coordinated so that unnecessary repetition is avoided, and a logical sequence of experiences can be followed. Proposals to expand the duration of pre-service teacher education should follow a careful examination of the structure of the programs in force. It is often the case that the need lies in restructuring these programs, rather than extending the duration of a currently ineffective program. Pre-service programs should be pedagogically and practically oriented, and should enable teachers to teach in multiple contexts and to diverse groups of children, and also help them understand how to build effective school/community partnerships. Teacher education cannot be a substitute for high-quality beginning teachers or other basic conditions for teaching in schools. It continues to be of great importance to attract talented people to the profession, and it is necessary to equip schools with resources that make high-quality instruction possible.

In the heterogeneous landscape of China, education is a study in contradiction and there is a need to explore the diversity and challenges to its vast

education system. The superior performance of Chinese students in the Program of International Student Assessment has prompted an increasing research interest to investigate the paradox of Chinese learners and teachers. What is the relevance of a western concept of PLCs in a Chinese context, where culture and practice emphasize collectivism rather than the promotion of the individual? What are the characteristics of a PLC school in a Chinese context? Does formal structure create a degree of inflexibility that violates the discretionary judgment that is central to teacher professionalism? Is contrived collegiality or genuine collegiality a distinctive feature of TPD in China? This study seeks to demystify the PLCs and illuminate how the PLC processes work in Chinese schools. In the field of Chinese context, almost every Chinese school has their own PLCs. It is a tradition that novice teacher should cooperative with mutual teacher, and teachers works together to solve teaching issues. However, in the contemporary teacher education, in order to achieve educational reform and TPD, Chinese PLCs in schools need to improve and reform.

Apart from these issues, the researcher finds that both English and Chinese literature lacks the study in the following aspects: 1. How individual teacher uses the resource from the PLCs to improve TPD. 2. Are there any differences on PLCs impact between novice teacher and veterans? 3. How different type (school-based,

research-based and virtual community) PLCs affect TPD. 4. Is there any mechanism for using PLCs to improve TPD? Therefore, our research will base on these unsolved questions to develop the proper research question on the Chinese high school's context.

2.9 Research Framework

This research focuses on analyzing the opportunities, barriers and proposed strategies for improving TPD in the effective PLCs in China. This research has four main targets: investigating the degree to which English teachers with different backgrounds participated and learned in PLCs in Chinese high schools; analyzing and comparing level and learning outcomes of English teachers participating in PLCs in high schools with different school contexts; analyzing the opportunity and barriers affecting English teachings' learning in PLCs and the outcomes; proposing strategies for enhancing effective PLC for Chinese high schools.

The study concentrates on teachers' assessment of the effective PLCs and the levels of PLC participation influences on teachers' learning outcomes. Five core elements of an effective PLC include supportive and shared leadership; shared values and vision; collective creativity; shared personal practice and supportive conditions had been applied to the investigation. The conceptual framework of this study was as

follows:

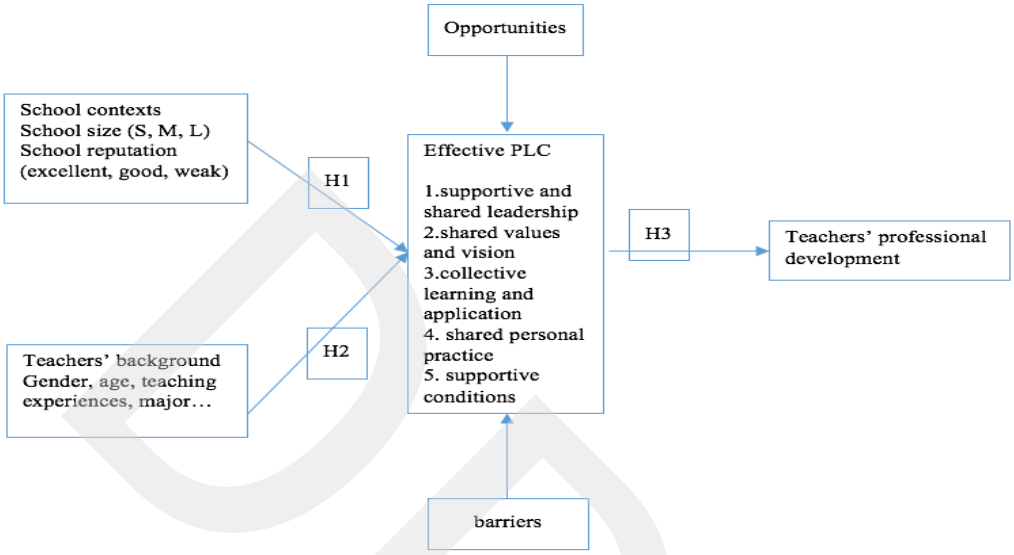

Figure 2.1 Conceptual framework

CHAPTER 3

RESEARCH METHODOLOGY

The research method used in this study was descriptive research. The content in this chapter consisted of 1) research hypotheses and proposition, 2) research samples, 3) research instruments, 4) research processes, and 5) data collection and analysis.

3.1 Research Hypotheses and Proposition

3.1.1 Research hypotheses of factors influencing TPD

According to the previous literature, it has been evidenced that TPD had been influenced by the school contexts and teachers' individual backgrounds. Hence, this study introduced questionnaire to examine the relevant influence factors. The hypotheses of the first research questions are that:

H1: School context (school size-small/medium/large; and school reputation-poor/average/excellent) and teacher background (teaching experience) are factors influencing English teachers participating in PLC.

H2: Different levels of PLC participation (low, medium, high) significantly affect teachers' learning outcomes.

3.1.2 Proposition of opportunities and barriers affecting teachers' learning in PLC

According to the Chinese high schools' categories, there are three types of high schools including excellent schools, average schools and poor schools. Generally, excellent schools benefit from rich educational resources from the region. Hence, these schools might provide PLCs with better opportunities and resources to support TPD. Such as inviting scholars to the school, purchasing advanced technology and having more cooperation with international schools. While, poor schools may lack of enough resources to support TPD.

Along with this line, this study assumes that:

H3: Levels of PLC effectiveness have significant impacts on teachers' learning outcomes/TPD.

3.1.3 Proposition of teachers' strategies of resource usage in TPD.

In this study, TPD focuses on four aspects: skills, knowledge, dispositions, and values. Existing PLCs were expected to offer individual teachers with opportunities to develop TPD. During the investigation, especially for one-to-one interview, the research concentrated on how individual teacher employ strategies to develop their skills, knowledge, dispositions and values after the PLCs' professional

development activities. For this question, this study assumes that structural features of PLC will affect teachers' strategies in improving TPD. Compared to the individual teacher, the second assumption of this research question is that PLC's professional development activities will have effect on teachers' strategies in improving TPD.

3.2 Research Samples

The data will be collected via questionnaire and in-depth and semi-structured individual interviews in high schools located in Changchun, Northeast of China. Changchun is the capital city of Jilin Province, with a population of 8 million people. There are 42 high schools in this city. For the quantitative research, the research conducted the questionnaire to English teachers in 42 high schools of this city. 422 valid questionnaires have received among these schools.

Table 3.1 Sampling frame for schools selection

School Size Criteria	**Small**	**Medium**	**Large**	**Total schools**
Excellent	1	1	1	3
Average	1	1	1	3
Poor	1	1	1	3
Total schools	3	3	3	9

In this study, the sampling schools are selected with different reputation and resources as well as different sizes. School Size: According to the regulations

<Standard for the Construction of School Buildings in Urban Primary and Secondary Schools> of China, every academic class has 50 students in Chinese high schools. In this research, the criteria of school size were divided into three types. Small: <18 academic classes, 900 students; Medium: 18-36 academic classes, 900-1800 students; Large: >36 academic classes, 1800 students.

Criteria of School Resources: According to the college admission rate of high schools, high schools generally have been divided into three categories by the public in one Chinese city. Excellent schools' students mostly admitted by universities in the world, or top 10 universities in China. Average schools' students mainly go to the top 100 universities. Poor schools' students seldom admitted by top 100 universities and most of them are admitted by second level of Chinese higher education institutions or vocational colleges. This information is not officially, while it is identified by the public. More importantly, these criteria are recognized by the parents when they are choosing high schools for children.

As the qualitative research, this research used school site visiting in depth interview with teachers from 9 selected schools. More specifically, we will select one excellent school, one average school and one poor school from each school size. The detail information of sampling schools and teachers is presented in the Table 3.1 and

3.2.

Table 3.2 Sampling frame for teacher selection

School Size Criteria	Small	Medium	Large	Total teachers
Excellent	1 school x 3teachers=3 teachers	3	3	9
Average	3	3	3	9
Poor	3	3	3	9
Total teachers	9	9	9	27

Note: definition of School Size and Criteria of School Resources are the same with the Table 3.1.

In order to further investigate the information of teachers' professional development experiences in the PLCs, this study adopted the deep interviews among the 9 sampling schools. Detail information 27 interviewees and 9 schools were presented in the Table 3.3.

Table 3.3 Background information of teacher samples

	NO.	Gender	Teaching experiences	Education level	The leader of PLC
Excellent school A (Large)	A1	Female	13	Education PhD	YES
	A2	Male	17	Master	NO
	A3	Female	6	Master	NO
Excellent school B (Medium)	B1	Male	22	PhD	YES
	B2	Female	16	Bachelor	NO
	B3	Female	4	Master	NO
Excellent	C1	Male	22	PhD	YES

Table 3.3 (continued)

	NO.	Gender	Teaching experiences	Education level	The leader of PLC
school C (Small)	C2	Female	22	Bachelor	NO
	C3	Female	3	Master	NO
Average school D (Large)	D1	Female	18	Master	YES
	D2	Female	12	Bachelor	NO
	D3	Male	24	Bachelor	NO
Average school E (Medium)	E1	Male	22	Master	YES
	E2	Female	16	Bachelor	NO
	E3	Female	3	Master	NO
Average school F (Small)	F1	Female	23	Master	YES
	F2	Female	11	Bachelor	NO
	F3	Male	3	Master	NO
Poor school G (Large)	G1	Male	27	Master	YES
	G2	Female	13	Bachelor	NO
	G3	Female	4	Master	NO
Poor school H (Medium)	H1	Female	24	Bachelor	YES
	H2	Male	19	Bachelor	NO
	H3	Female	8	Master	NO
Poor school I (Small)	I1	Female	6	Bachelor	YES
	I2	Female	20	Bachelor	NO
	I3	Male	1	Bachelor	NO
Total	27				

In summary, this study has investigated 422 English teachers in Changchun's high schools by questionnaire. 27 in-depth interviews had been conducted among 9 selected schools.

3.3 Research Instruments

3.3.1 Questionnaire Construction

The questionnaire will focus on answering the following research questions: (1) What types of PLC most English teacher participate in? Are there any differences among school contexts and teachers' background? (2) On average, what is the average level of PLC participation of English teachers? How do English teachers participate in PLCs according to PLC attributes? (3) On average, what is the average level of TPD (learning outcomes) from PLC participation?

The researcher applied Professional Learning Community Assessment (PLCA) developed by Olivier *et al.* (2003) and literature review results as guideline for questionnaire construction. Based on these informations, the author developed a draft questionnaire. Then, experts, such as the professors from the teacher education, the reactor, leaders of the PLCs and English teachers of the high schools, had been invited to the focus group discussion of the revising the questionnaire. Then, 130 English teachers were invited as the sample of tryout. Factor analysis and Cronbach α were used to verify the construct validity and internal consistency reliability of the questionnaire. After cancelling and adding some items, finally, the formal questionnaire was determined.

3.3.1.1 The content of questionnaire

The questionnaire was constructed by three parts. The first part is demographic information. This part aims at to investigate the background information of individual teachers and the school where they are works. Personal information includes age, gender, years of teaching experiences; highest degree earned the identity in the PLC, the type of graduation school, credential of English language. School information constitutes the resources and the size of the school. The second part is the multi-choices of the types of PLCs and the teachers' participation in these PLCs. The third part is the Five-Point Likert of English teachers' evaluation of PLCs and TPD. This part explores five core elements of PLCs including the supportive and shared leadership; shared values and vision; collective creativity; shared personal practices and supportive conditions and examines English teachers' opinions of TPD in the PLCs.

3.3.1.2 Answering and Scoring Method

The third part of the questionnaire used Five-Point Likert research method. Respondents needed to choose the most suitable answer from the "strongly disagree, disagree, partly agree, agree and strongly agree". Every level was given scores from the 1 point to 5 points. The higher the scores, the better the English teachers

evaluated.

3.3.1.3 Revising the draft questionnaire

Firstly, the researcher reviewed the studies of assessment effective PLCs. According to Olivier *et al.* (2003) research of effective assessment PLCs' in schools, five core elements of effective PLCs have been identified via empirical research. The Professional Learning Community Assessment (PLCA) was initially created to assess everyday classroom and school-level practices in relation to PLC attributes. The measure has been administered to professional staff in numerous school districts at varying grade levels throughout the United States. Their research has confirmed internal consistency resulting in the following Cronbach Alpha reliability coefficients for factored subscales (n=1209): Supportive and Shared Leadership (.94); Collective Creativity (.91); Shared Values and Vision (.92); Shared Personal Practice (.87); Supportive Conditions-Relationships (.82); Supportive Conditions-Structures (.88). The developers of the assessment determined that one teachers' professional learning was missing from the original instrument. In the PLCA-R, it serves as an even more powerful formal diagnostic tool for identifying school-level practices that support intentional professional learning. This assessment tool has gone through construct validity (expert study and factor analysis) and has yielded satisfactory internal

consistency for reliability. This diagnostic questionnaire has been employed to diversify countries and educational context (Bolam *et al.*, 2005; Mitchell & Sackney, 2011; Sackney & Walker, 2006; Stewart, 2017). In 2010, this questionnaire was published online as one program of SEDL (Southwest Educational Development Laboratory). The final questionnaire of current research derived from the 2010 version.

This research literally translated all the 52 items of the PLCA-R at the beginning. In the meantime, in order to emphasize the results of TPD, the researcher added one attribute about the learning outcomes via PLC. This attribute includes 5 items (See in Table 3.5).

After revising the draft questionnaire, the new version consisted of 57 items, 2 multi-choices of the type and the participation of PLCs, and 10 elements of demographic information was sent to the English teachers and professors (see details in Table 3.5), who are professionals in the teacher education, in one focus group meeting. The translation of each items were identified and modified by the professional linguistics. For example, there are no pure administrative staffs in the secondary education. All the administration affairs are filled by teachers. Hence, “staffs/school staffs” in the original questionnaire were replaced by the “teachers”.

One the other hand, considering the unique Chinese situation, public and government seldom directly involved in the affairs inside schools. Thus, two items of stakeholders had been cancelled. The "shared values and vision" in the Chinese collective cultural were vague at the translation level. The items of this attribute were merged and cancelled. In addition, China has a long tradition of PLC. Up to date, the Chinese PLCs already form a good administrative status. The items of supportive conditions had been modified according to the reality in high schools. All the original and revised items were listed in Table 3.5.

Table 3.4 The experts' list of focus groups

Number	Working organization and job title
A	Northeast Normal University; The Faculty of Education; professor
B	Northeast Normal University; The Faculty of Education; Assistant professor
C	Northeast Normal University; The Faculty of Education; PhD student
D	Northeast Normal University Affiliated High School ; Rector
E	Northeast Normal University Affiliated High School ; Leader of the English PLC
F	Northeast Normal University Affiliated High School ; English teacher
G	Northeast Normal University Affiliated High School ; English teacher

Table 3.5 Changing items of the draft questionnaire

Attributes	Original items	Modified items
Supportive and shared leadership	11 items (Olivier *et al.*, 2003)	8 items Deleting 3 items
Collective creativity	10 items (Olivier *et al.*, 2003)	9 items Deleting 1 item
Shared values and vision	9 items (Olivier *et al.*, 2003)	6 items Deleting 3 items

Table 3.5 (continued)

Attributes	Original items	Modified items
Supportive conditions	9 items (Olivier *et al.*, 2003)	5 items
	Relationships: 5 items	Deleting 2 items
	Structures: 4 items	4 items had been changed into 1 items and 1 item had been added
Learning outcomes in PLC	**11items (Villegas-Reimers, 2003)**	5 items Deleting 6 items

At the end, a 52 items questionnaire naming "English Teachers' Assessment of Professional Learning Community and Professional Development in the Chinese High School" was eventually finished (see Appendix 1). This draft questionnaire was constituted by three parts: 10 items of demographic information, 2 items multi-choices and 40 items of Five -Point Likert.

The first aspect was school contextual issue including 1) school reputation and resources 2) school size.

The second aspect was teachers' personal background consisting 1) age, 2) gender, 3) teaching experiences, 4) highest degree, 5) the role in the PLCs, 6) the type of graduate school 7) the credential of English language 8) major.

Supporting by the English teachers, third aspect involved 2 items about the investigation of the types of PLCs and the degree of teachers' participation in different PLCs were added in the revised questionnaire.

Table 3.6 The content of draft questionnaire

Number	Content	Filling method	Attributes	Numbers of items	Item Number
First section	Demographic information	One choice		10	1-10
Second section	Types and levels of participation in PLCs	Multi-choices		2	11-12
Third section	**PLC effectiveness**	Five-points Likert	Supportive and shared leadership	8	01-08
			Shared values and vision	6	09-14
			Collective creativity	9	15-23
			Shared personal practice	7	24-30
			Supportive conditions	5	31-35
Fourth section	**Teachers professional development**	Five-points Likert	Learning outcomes	5	36-40

3.3.1.4 Tryout of the questionnaire

The 130 English teachers were invited to do the questionnaire tryout. Finally, 111 questionnaires (85.4%) were usable for the analysis. SPSS 24.0 was used to examine the validity and internal consistency reliability of the questionnaire.

3.3.1.5 Item analysis

Firstly, comparisons of extreme groups, corrected item-total correlation and Cronbach's α had been used to examine the internal consistency. According to the Table 3.7, all the item analysis presents a high internal consistency. Thus, all the items

can be used for the factor analysis.

Table 3.7 The results of item analysis

Number and the content of the items		CR	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PLC effectiveness				
T1	Teachers are consistently involved in discussing and making decisions about most teaching and learning issues.	8.065***	.649	.980
T2	The leader of PLCs incorporates advice from teachers to make decisions.	10.206***	.721	.970
T3	The leader participated democratically with teachers sharing power and authority.	9.436***	.728	.970
T4	The leader of PLCs is proactive and addresses areas where support is needed.	12.105***	.783	.970
T5	The leader of PLCs shared responsibility and rewards for innovative actions.	13.210***	.812	.960
T6	Opportunities are provided for teachers to initiate change.	10.865***	.734	.970
T 7	Decision-making takes place through committees and communication across grade and subject areas.	7.401***	.655	.980
T8	Teachers have accessibility to key information.	10.944***	.798	.970
T9	A collaborative process exists for developing a shared sense of values among teachers.	12.234***	.837	.960
T10	Shared values support norms of behavior that guide decisions about teaching and learning.	13.283***	.810	.960
T11	Teachers share visions for school improvement that have an undeviating focus on student learning.	8.478***	.638	.980
T12	Decisions are made in alignment with the school's values and vision.	9.392***	.779	.970
T13	School goals focus on student learning beyond test scores and grades.	8.827***	.671	.980
T14	Data are used to prioritize action to reach a shared value and vision.	7.246***	.633	.981
T15	Collegial relationships exist among teachers that reflect commitment to their professional development.	11.832***	.740	.970
T16	Teachers plan and work together to search for solutions to address their teaching needs.	8.575***	.753	.970
T17	Teachers learn together and apply new knowledge to solve problems.	11.246***	.759	.970
T18	Teachers collaboratively analyze student work to improve teaching and learning.	9.616***	.758	.970
T19	Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.	7.431***	.736	.970
T20	A variety of opportunities and structures exist for collective learning through open dialogue.	9.623***	.737	.970

Table 3.7 (continued)

Number and the content of the items		CR	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
T21	Professional development focuses on teaching and learning.	6.782***	.724	.970
T22	Teachers are committed to programs that enhance learning.	9.232***	.729	.970
T23	Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.	8.850***	.753	.970
T24	Opportunities exist for teachers to observe peers and offer encouragement.	6.314***	.665	.980
T25	Teachers provide feedback to peers related to instructional practices.	8.920***	.759	.970
T26	Teachers informally share ideas and suggestions for improving student learning.	7.684***	.710	.970
T27	Teachers collaboratively review student work to share and improve instructional practices.	7.65***3	.747	.970
T28	Opportunities exist for coaching and mentoring.	8.445***	.797	.970
T29	Individuals and teams have the opportunity to apply learning and share the results of their practices.	10.396***	.849	.960
T30	Teachers regularly share student work to guide overall teachers' learning.	9.295***	.831	.960
T31	Caring relationships exist among teachers and students that are built on trust and respect.	9.418***	.647	.980
T32	Outstanding achievement is recognized and celebrated regularly in my school.	11.488***	.788	.970
T33	Relationships among teachers support honest and respectful examination of data to enhance teaching and learning.	8.863***	.762	.970
T34	School provides enough time and money for the professional learning activities in PLCs.	9.638***	.716	.970
T35	Parents support teachers participate in the activities of PLCs.	11.355***	.700	.970
TPD				
T36	My linguistic knowledge about English had improved via PLCs.	7.253***	.762	.970
T37	My pedagogical knowledge had improved via PLCs.	7.010***	.756	.970
T38	My knowledge of strategies, techniques and tools to create and sustain a learning environment/community, and the ability to use them effectively had improved via PLCs.	7.661***	.780	.970
T39	My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs.	8.497***	.802	.960
T40	My Knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs.	8.269***	.759	.970

3.3.1.6 Factor analysis

After the item analysis was finished, the subject retained was examined by the KMO sampling appropriateness test, Bartlett's spherical test and the common index test to determine whether it is suitable for further factor analysis.

After the examination of 40 items, the KMO reached to .900, it clarifies that there are common factors between the items. The Bartlett's spherical test achieved the significant ($p < .001$). 40 items can be used for factor analysis. The factor analysis is based on the correlation matrix to estimate commonality.

Using principal component analysis, extraction of eigenvalues is greater than 1, the maximum variation of the method of orthogonal rotation axis.

After two times factor analysis, 5 items were deleted because of the lower explanation. Because there were only two items that were evidenced to include in the "supportive conditions", this attribute was deleted at the end. In sum, 10 items were deleted from the draft version. The rest 30 items of extraction of eigenvalues is greater than 1. It can contribute to the 77.7% to the English teachers' evaluation of the PLCs and their TPD in the PLCs. The consequences of factor analysis were presented in the Table 3.8.

Table 3.8 The results of factor analysis

Pre-test number	Number of the final version	Component					Communities
		Collective creativity	Supportive and shared leadership	TPD	Shared values and vision	Shared personal practice	
PLC effectiveness							
1	1.Teachers are consistently involved in discussing and making decisions about most teaching and learning issues.		.385				.700
2	2.The leader of PLCs incorporates advice from teachers to make decisions.		.868				.888
3	3.The leader participated democratically with teachers sharing power and authority.		.821				.830
4	4.The leader of PLCs is proactive and addresses areas where support is needed.		.787				.841
5	5.The leader of PLCs shared responsibility and rewards for innovative actions.		.675				.825
6	6.Opportunities are provided for teachers to initiate change.		.727				.762
7	7.Decision-making takes place through committees and communication across grade and subject areas.		.387				.687
8	8.Teachers have accessibility to key information.		.408				.757
9	9. A collaborative process exists for developing a shared sense of values among teachers.				.468		.755
10	10.Shared values support norms of behavior that guide decisions about teaching and learning.				.422		.680
11	11.Teachers share visions for school improvement that have an undeviating focus on student learning.				.479		.608
15	12. Collegial relationships exist among teachers that reflect commitment to their professional development.	.570					.681
16	13. Teachers plan and work together to search for solutions to address their teaching needs.	.528					.758
17	14. Teachers learn together and apply new knowledge to solve problems.	.538					.818
18	15. Teachers collaboratively analyze student work to improve teaching and learning.	.757					.839
19	16. Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.	.805					.803
20	17. A variety of opportunities and structures exist for collective learning through open dialogue.	.698					.736
21	18.Professional development focuses on teaching and learning.	.718					.725
22	19. Teachers are committed to programs that enhance learning.	.455					.733
23	20. Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.	.523					.795
29	21. Opportunities exist for teachers to observe peers and offer encouragement.					.650	.721

Table 3.8 (continued)

Pre-text number	Number of the final version	Component					Communities
		Collective creativity	Supportive and shared leadership	TPD	Shared values and vision	Shared personal practice	
30	22. Teachers provide feedback to peers related to instructional practices.					.356	.716
31	23.Teachers informally share ideas and suggestions for improving student learning.					.696	.801
32	24.Opportunities exist for coaching and mentoring.					.687	.820
33	25. Individuals and teams have the opportunity to apply learning and share the results of their practices.					.396	.756
TPD							
36	26. My linguistic knowledge about English had improved via PLCs.			.804			.890
37	27. My pedagogical knowledge had improved via PLCs.			.862			.943
38	28. My knowledge of strategies, techniques and tools to create and sustain a learning environment/community, and the ability to use them effectively had improved via PLCs.			.849			.949
39	29. My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs.			.777			.895
40	30. My Knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs.			.469			.744
Total		5.904	5.534	5.513	4.026	3.878	
% of variance		18.449	17.293	17.228	12.582	12.117	
Cumulative %		18.449	35.742	52.970	65.552	77.669	

Based on cleaning data form teachers' responses, most of items under "supportive conditions" attributes were missing. The items were as follows:

Supportive Conditions

1. Caring relationships exist among teachers and students that are built on trust and respect.

2. Outstanding achievement is recognized and celebrated regularly in my school.

3. Relationships among teachers support honest and respectful examination of data to enhance teaching and learning.

4. School provides enough time and money for the professional learning activities in PLCs.

5. Parents support teachers participate in the activities of PLCs

Some of the teachers who answered the questionnaire explained that they couldn't respond to those items. This may be due to the school culture in China. All were deleted from the data analysis. The PLC attributes were reduced to "Supportive and Shared Leadership", "Collective Creativity", "Shared Values and Vision" and "Shared Personal Practice".

3.3.1.7 Cronbach's Alpha Coefficients

After the 10 items had been deleted, the SPSS had been used to test the internal consistency. It followed Cronbach Alpha reliability coefficients for: Supportive and Shared Leadership (.94); Collective Creativity (.94); Shared Values and Vision (.85); Shared Personal Practice (.91); Learning Outcomes in PLC (.96).

The researcher also examined the internal consistency of five attributes. The following paragraphs present the detail information of every item.

Table 3.9 Internal consistency of "Supportive and Shared Leadership"

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1	Teachers are consistently involved in discussing and making decisions about most teaching and learning issues.	23.04	51.271	.662	.941
A2	The leader of PLCs incorporates advice from teachers to make decisions.	23.52	45.597	.858	.928
A3	The leader participated democratically with teachers sharing power and authority.	23.42	45.592	.811	.931
A4	The leader of PLCs is proactive and addresses areas where support is needed.	23.54	45.214	.851	.928
A5	The leader of PLCs shared responsibility and rewards for innovative actions.	23.53	45.669	.868	.927
A6	Opportunities are provided for teachers to initiate change.	23.52	45.070	.833	.930
A7	Decision-making takes place through committees and communication across grade and subject areas.	23.23	49.812	.672	.940
A8	Teachers have accessibility to key information.	23.24	48.586	.749	.935
N of Items= 8, Mean= 26.72, Variance = 61.003, SD= 7.810					

According to the Table 3.9, it shows that the Cronbach Alpha reliability coefficients of "Supportive and Shared Leadership" stay at .94. Namely, this attribute has a high internal consistency. The Cronbach's Alpha if Item Deleted of 8 items is between .930-.941. Std. Deviation of 8 items is 7.810.

Table 3.10 Internal consistency of "Collective Creativity"

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
C1	Collegial relationships exist among teachers that reflect commitment to their professional development.	29.76	39.204	.732	.932
C2	Teachers plan and work together to search for solutions to address their teaching needs.	29.46	39.614	.718	.932
C3	Teachers learn together and apply new knowledge to solve problems.	29.46	39.669	.788	.928
C4	Teachers collaboratively analyze student work to improve teaching and learning.	29.63	38.744	.817	.923
C5	Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.	30.05	37.687	.841	.925
C6	A variety of opportunities and structures exist for collective learning through open dialogue.	29.67	38.933	.804	.927
C7	Professional development focuses on teaching and learning.	29.85	37.804	.781	.929
C8	Teachers are committed to programs that enhance learning.	29.72	40.312	.694	.934
C9	Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.	29.67	40.188	.733	.931
N of Items= 9, Mean= 33.34, Variance = 49.318, SD= 7.023					

According to the Table 3.10, it shows that the Cronbach Alpha reliability coefficients of "Collective Creativity" stay at .94. Namely, this attribute has a high internal consistency. The Cronbach's Alpha if Item Deleted of 9 items is between .923-.934. Std. Deviation of 9 items is 7.023.

Table 3.11 Internal consistency of "Shared Values and Vision"

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
B1	A collaborative process exists for developing a shared sense of values among teachers.	7.49	3.161	.790	.726
B2	Shared values support norms of behavior that guide decisions about teaching and learning.	7.60	3.060	.823	.691
B3	Teachers share visions for school improvement that have an undeviating focus on student learning.	7.25	4.372	.582	.914
N of Items= 3, Mean= 11.17, Variance = 7.398, SD= 2.720					

According to the Table 3.11, it shows that the Cronbach Alpha reliability coefficients of "Shared Values and Vision" stay at .85. Namely, this attribute has a high internal consistency. The Cronbach's Alpha if Item Deleted of 3 items is between .691-.914. Std. Deviation of 3 items is 2.720.

Table 3.12 Internal consistency of "Shared Personal Practice"

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
D1	Opportunities exist for teachers to observe peers and offer encouragement.	15.39	11.839	.737	.891
D2	Teachers provide feedback to peers related to instructional practices.	15.68	11.309	.721	.896
D3	Teachers informally share ideas and suggestions for improving student learning.	15.32	11.491	.825	.874
D4	Teachers collaboratively review student work to share and improve instructional practices.	15.43	11.393	.833	.872
D5	Opportunities exist for coaching and mentoring.	15.51	11.088	.729	.895
N of Items= 5, Mean= 19.33, Variance = 17.442, SD= 4.176					

According to the Table 3.12, it shows that the Cronbach Alpha reliability

coefficients of “Shared Personal Practice” stay at .91. Namely, this attribute has a high internal consistency. The Cronbach’s Alpha if Item Deleted of 5 items is between .872-.896. Std. Deviation of 5 items is 4.176.

Table 3.13 Internal consistency of “Learning Outcomes in PLC”

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
F1	My linguistic knowledge about English had improved via PLCs.	15.45	13.632	.914	.950
F2	My pedagogical knowledge had improved via PLCs.	15.46	13.596	.928	.948
F3	My knowledge of strategies, techniques and tools to create and sustain a learning environment/community, and the ability to use them effectively had improved via PLCs.	15.41	13.372	.955	.943
F4	My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs.	15.40	13.205	.925	.948
F5	My Knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs.	15.54	14.087	.756	.976
N of Items= 5, Mean= 19.32, Variance = 21.018, SD= 4.585					

According to the Table 3.13, it shows that the Cronbach Alpha reliability coefficients of “Learning Outcomes in PLC” stay at .96. Namely, this attribute has a high internal consistency. The Cronbach’s Alpha if Item Deleted of 5 items is between .943-.976. Std. Deviation of 5 items is 4.585.

After synthesizing the information above, 30 items of five-attributes were

suitable for the judging criteria. These 30 items of Five-Points Likert, 10 items of demographic information and 2 items of multi-choices of PLCs constitute the formal questionnaire.

Finally, the formal questionnaire was carried out among high school English teachers in Changchun. Then, data analysis including descriptive statistics, ANONA and hierarchical regression analysis were used in the analytical process.

3.3.2 Construction of Interview Guidelines

This research used in-depth interviews to answer the following research questions: (question #5) What are the factors influencing the levels of PLC participations and learning outcomes of English teachers? (question #6) How school context and teacher background influence teachers' professional learning in PLC and learning outcomes? (question #7) What are the opportunities and barriers affecting teachers' learning in PLCs and their learning outcomes? (question #8) What would be the appropriate strategies for enhancing effective PLC for English teachers in Chinese high schools?

According to Bogden and Biklen (1998), interviews can "vary in the degree to which they are structured" (p.94). Fontana and Frey (1994) also provide a range from structured interview designs. For the purpose of this study, the interviews were

structured in a search for confirmation of data gleaned from the survey instruments. There was also room for open-ended responses to elaborate on the scaled answers given because "it is surprising how much people are willing to say to those whom they believe are really willing to listen."

As interviewer, the researcher followed the guidelines proffered by Fontana and Frey: to avoid along explanations of the study; to never deviate from the sequence of questions views or interpret the meaning of a question. Instead, the researcher/interviewer focused on gathering concrete examples to support initial judgments of the respondents. While the interviews were taped for transcription, field notes were also taken by the researcher/interviewer and later added to the data.

According to Garet *et al.* (2001), two attributes including structural features and TPD activities contributes to teachers' effective TPD (Garet, Porter, Desimone, Birman, & Yoon, 2001). More specifically, the form of the activity, collective participation of teachers from the same school, grade, or subject, and the duration of the activity connect to structural features of PLCs and have positive effect on teacher learning. For the PLCs, whether the activities focus on the content knowledge, whether these activities coherence with other learning activities or whether teachers have been offered enough opportunities for active learning have positive on effective

TPD.

After summarizing previous studies, collected the questionnaire outcomes, and combined the situation in the Chinese high schools, the researcher designed 15 interviewing questions.

These 15 interviewing questions were discussed in a focus group by the professors and English teachers from the relevant field. At the end, the original question “Which forms of professional development activities do you think provide you with the actual help in your professional development?” were divided into two questions “Which kind of tactics do you prefer to use for improving your English language knowledge? ”, “What kind of strategies do you prefer to use for improving your teaching skills?” Because the research included the detail document analysis, the question “have you ever offered any opportunities for active learning in PLCs?” was deleted from the interviewing questions. Question “would you like to share any other information related to PLCs which you participated in before we conclude this interview?” was added to provide the respondents with opportunities to share more experiences and feelings. Finally, 15 interviewing questions were organized as the final in-depth interviews. See the details in Appendix 4.

Then, this study chose nine schools as our sampling school and had a

focusing group with English teachers in Changchun. With English teachers' help, 12 open-ended questions were designed for the final version of in-depth interviews. (See details in Appendix 2).

3.3.2.1 Methods of validity examination

According to Creswell (2007), qualitative researchers strive to understand that deep structure of knowledge that comes from visiting personally with participants, spending extensive time in the field, and probing to obtain detailed meanings (Creswell, 2007, p. 201). In doing so, the researcher acknowledges that one of the most important concerns is that the findings of the study are both credible and accurate. Drawing from this approach, the researcher incorporated data triangulation; member checking; thick, rich descriptions; and reflexivity to enhance the accuracy of the data analysis.

Data triangulation. The most common form of establishing validity is data triangulation (Creswell, 2007). Triangulation of data was an important part of the data analysis. The researcher collected a variety of data to provide corroborating evidence, including in-depth interviews and document analysis.

Member checking. According to Lincoln and Guba (Lincoln & Guba, 1985), member checking is one of the most critical techniques for establishing

credibility in a qualitative study. The researcher took tentative interpretations back to the individual participants to ensure that the researcher "got it right." The researcher provided the participants with the opportunity to offer additional feedback or correct errors on the preliminary analysis. By using this strategy, the researcher ensured that the emergent themes accurately reflected participants' perspectives.

Rich, thick description. Another method for establishing validity is to provide rich, thick descriptions in the study. According to Creswell (2007), writing rich, thick descriptions allows readers to make decisions regarding transferability. The researcher provided robust descriptions that contextualized the setting and its participants.

Reflexivity. As a final strategy to establish validity, the researcher used reflexivity. This strategy required the researcher to be self-aware and reflective of his writing throughout the course of the study. According to Creswell (2007), “All researchers shape the writing that emerges, and qualitative researchers need to accept this interpretation and be open about it in their writing” (p. 179). With this understanding, the researcher disclosed his biases and positions at the beginning of the study. The researcher utilized field notes to track his assumptions in regard to the current Chinese PLCs characteristics and development.

3.4 Research Processes

The mixed method had been used to conduct this research. The research processes were divided into seven steps.

1) According to the literature reviews, the researcher summarized the influence factors of effective Chinese PLCs from the studies of DuFour *et al.* (2005), Hord *et al.* (2008) and Stoll *et al.* (2006). Their research of effective PLCs has been widely investigated by other scholars in different countries. Based on Olivier, Hipp and Huffman's research about professional development assessment(Olivier, Hipp, & Huffman, 2010), they developed a questionnaire about "Professional Learning Communities Assessment(PLCA-R)" to investigate principals, academic staffs and administrative staffs' assessment, opinions about school as an effective PLC. This research followed their questionnaire to examine the Chinese high school English teachers' perceptions about effective PLCs. Apart from the original five elements of the effective PLCs; this research added 5 items to explore the outcomes of TPD.

2) After the researcher translated the questionnaire and finished the tryout in schools, this study randomly selected 484 high school English teachers in Changchun of China and conducted the final questionnaire online.

3) SPSS 24.0 had been used to analyze the collecting data.

4) Then, this research used in-depth interviews to solve the research questions 2 & 3. Based on Garet *et al*. (2001) research about effective TPD, the researcher designed the interview questions.

5) According to the teachers' age, teaching experiences and their position in the PLCs, the researcher stratified selected 27 interviewees among 9 selected high schools in Changchun. Those teachers are one leader of PLC, one veteran teacher, and one novice teacher from each selected schools.

6) All the qualitative data had been recorded and transcribed. Following the transcription, all the data had been coded and inductively analyzed.

7) Finally, quantitative data and qualitative data had been summarized for the final conclusions.

3.5 Data Collection and Analysis

3.5.1 Data collection and analysis for questionnaire

More specifically, research question 1 relied on quantitative online survey data and statistical analysis. The Chinese questionnaire (Appendix 3) is issued to teachers by the application star of questionnaire online for collecting quantitative data and it has been translated in English (Appendix 2). Based on the conclusion of literature reviews and summaries of some PLCs' meeting, the researcher designed a

questionnaire about the influential factors for TPD.

In order to ensure the validity and reliability of the questionnaire, this study assessed them before carrying the actual study. At first, the indicators and dimensions of the questionnaire were summarized from the previous literature. Secondly, this study organizes groups meetings with the professors of relevant research field and asks them to evaluating the questionnaire. Thirdly, the researcher conducted the tryout among some Chinese high schools' English teachers to analysis the validity. For the reliability, the researcher used the repeat questions and professors' emulations to ensure it. Finally, based on these conclusions, this research finished the design of the questionnaire.

After that, this study used the questionnaire to investigate the English teachers from the high schools of Changchun. At last, SPSS had been used to analysis the influential factors.

During the analysis process, the researcher used descriptive statistics to present the data of my samples. Then through the factor analysis, this study tried to investigate the influence factors of high school English professional development. At last, the research conducted the deep analysis by descriptive statistics, T-test, one-way ANOVA, person correlation coefficient, multiple regression analysis, hierarchical

regression analysis. The details of data statistics analysis were showed in Table 3.14.

Table 3.14 Data Analysis Based on Research Questions

Research questions	Hypotheses	Analysis
1. What types of PLC most English teacher participate in? Are there any differences among school contexts and teachers' background? 2. On average, what is the average level of PLC participation of English teachers? How do English teachers participate in PLCs according to PLC attributes? 3. On average, what is the average level of TPD (learning outcomes) from PLC participation?		Descriptive Statistics
4. How school contexts and teacher background explained teachers' PLC participation and their learning outcomes? What are the influential factors on TPD (learning outcomes)?	School context (school size -small/ medium/large; and school reputation- poor/ average/excellent) and teacher background (teaching experience) are factors influencing English teachers participating in PLC. Different levels of PLC participation (low, medium, high) significantly affect teachers' learning outcomes.	t-test One-way ANOVA
5. What are the opportunities and barriers affecting teachers' learning in PLCs and their learning outcomes?	Levels of PLC effectiveness have significant impacts on learning outcomes.	Person's product moment Multiple regression analysis hierarchical regression analysis
6. What would be the appropriate strategies for enhancing effective PLC for English teachers in Chinese high schools?	Based on the previous research, this research will affect teachers' strategies in improving their TPD.	In-depth interviews

3.5.2 Data collection and analysis of qualitative methods

Merriam (1998) identifies data collection as asking, watching, and

reviewing (p. 69). Two primary forms of data collection had been utilized including documents reviewing, interviews. These three sources for data collection allow the researcher —to gain a broader and more secure understanding of the PLCs in China and its impact on teacher practice and student learning.

The study design is primarily exploratory and interpretative. The purpose of interpretive research is important in envisaging the social reality of the case setting, which is initially unknown until the researcher understands the way the participants interact in their world (Radnor, 2001). The case-study approach was utilized to capture the participants' viewpoint and allowed the researchers to maintain their own perspectives as outsiders (Gall, Borg, & Gall, 1996). The decision to focus on nine schools was on the grounds that each case would generate considerable and manageable data from which initial general conclusions could be drawn.

This study focuses on TPD, trying to understand how teachers developed their skills, knowledge, dispositions and values in their working lives, and exploring the relationship between TPD and PLCs.

Because of the subjective of qualitative methods, the triangulation had been applied to this study. The research would collect the data of documents reviewing, individual interviews.

3.5.2.1 Documents Reviewing

Before I contact with individual teachers, firstly, I reviewed all the information on the website of high schools in Changchun. Then, according to my research questions, nine schools mentioned before were chosen as the sampling school. I use my own social network to contact the principals and friends in these nine schools. Finally, I got the school documents like documents of the school history, demographic information of the teachers, meeting notes of the PLCs, and part of students' documents. Relevant documents including government and school policies regarding professional learning were also referenced as an important resource while making interpretations in data analysis. During the new semesters' school meeting, I proposed my research to the teachers in each school. At those meetings, I found all the volunteers to participate my research.

3.5.2.2 Individual In-depth Interviews

To answer the research question 4, 5 and 6 semi-structured individual interviews with teachers in nine schools had been conducted by the author.

First, before conducting the interviews, I invited experts from different schools to discuss the interview design with the help of professors in the Northeast Normal University. Except for the experts that participating in the focus group, in the

deep-interview design process, three English teachers from the poor and small high schools were invited to the discussion. Table 3.15 presented the experts' list of pre-discussion of interview. In this meeting, nine schools were decided according to the school resources, school size, the researcher contacted the officials in the Department of Education of Changchun.

Table 3.15 Experts' list of deep-interview design

Number	Working organization and job title
A	Northeast Normal University; The Faculty of Education; Professor
B	Northeast Normal University; The Faculty of Education; Assistant professor
C	Northeast Normal University; The Faculty of Education; PhD student
D	Northeast Normal University Affiliated High School ； Rector
E	Northeast Normal University Affiliated High School ; Leader of the English PLC
F	Northeast Normal University Affiliated High School ; English teacher
G	Northeast Normal University Affiliated High School ; English teacher
H	Hope High School; Leader of the English PLC
I	The Sixth High School of Changchun; Leader of the English PLC
J	The Eleventh High School of Changchun; English teacher

Second, after met up with the teachers and key members of different schools, 27 teachers form nine different high schools with large, medium and small size; excellent, average and poor school resources backgrounds were picked up from these nine high schools. After all the interviewees agreed with joining the interviews, the researcher scheduled with all the English teachers with the interview time and location.

Third, Each interview last approximately 45 to 90 minutes. The interview questions focused on teachers' experiences, barriers and strategies of TPD among PLCs. Different interview guidance had been used based upon the participants' professional role. While similar, the interview questions were modified to match the responsibilities of the participants' position.

Fourth, all the qualitative data had been recorded and transcribed. Once all the individual interviews are collected, it had been inductively analyzed. Rather than making inferences and drawing conclusions, the researcher searched for the patterns, relationships and common themes within the data. The researcher had red and reread the qualitative data several times and coded the data based on grounded theory of qualitative research. The categorized code had been given a number, an operational definition, as well as a list of linguistic cues. When these linguistic cues are noted in further analysis of the data, the researcher had assigned the same number and categorical name to the new black of data. Once all data has been initially coded, the researcher utilized Microsoft Excel to set up a table of categories. Each category established as the heading for a column. Each coded block of data is copied from Microsoft Word and pasted to Microsoft Excel in the appropriate category column. By physically placing all similar statements together, the researcher is able to

recognize essential themes throughout the qualitative data. We do line-by-line coding with in depth interview data to gain a close look at what participants say and, likely, struggle with. For example, “G3-3-1” means the first sentence in the third paragraph of the person G3’ interview data.

Fifth, after the dissertation was finished, all the transcription and the content had been quoted were confirmed with the respondents. The researcher carefully discussed with the respondents whether the quoted content was correct.

CHAPTER 4

DATA ANALYSIS

The research aims to study the current situation of Chinese teachers' PLC effectiveness and their professional development experiences in different PLCs. In order to achieve that, this paper employed two research methods: questionnaire survey and in-depth interview, and the questionnaire of the English TPLCs and TPD has been used to test that in Changchun of China and analyze corresponding influencing factors. On this basis, researchers have interviewed 27 teachers from 9 schools and investigated the opportunities, barriers and strategies of TPD in the PLC.

This chapter summarizes two types of research data and is divided into four sub-sections. They are: Section I: The state of PLC participation and TPD of Chinese High School English teachers; Section II: Effects of PLC participation on TPD; Section III Analysis of opportunities for TPD in PLCs, Section IV: Analysis of barriers for TPD in PLCs, and Section V: Analysis of strategies for effective PLCs.

4.1 The State of PLC participation and TPD of Chinese High School English teachers

Background information of subjects

This research takes English teachers from 42 senior high schools in

Changchun, China as the parent group. Through the platform wjx.cn, a total of 484 formal network questionnaires were issued, including that 422 are valid, with 87.2% of the recovery samples efficiency after eliminating 62 invalid questionnaires which were just spent within 100 seconds and given similar answers. (Table 4.1)

Table 4.1 Background information of subjects

School/Teacher Contexts	Level of variables	N	%
1. School context			
1.1 School size			
	Large	230	54.5
	Medium	159	37.7
	Small	33	7.8
1.2 School reputation and resources			
	Excellent	123	29.1
	Average	82	19.4
	Poor	217	51.4
2. Teacher Background			
2.1 Age			
	21-25	10	2.4
	26-30	52	12.3
	31-40	221	52.4
	41-50	120	28.4
	51-60	19	4.5
2.2 Gender			
	Female	346	82.0
	Male	76	18.0
2.3 Teaching experience			
	1-5	52	12.3
	6-10	53	12.6
	11-15	125	29.6
	Over 15 years	192	45.5
2.4 Degree			
	Master	96	22.7
	Bachelor	322	76.3

Table 4.1 (continued)

School/Teacher Contexts	Level of variables	N	%
	Junior College	4	.9
2.5 Graduation from normal university	Yes	368	87.2
	No	54	12.8
2.6 Disciplines and majors			
	English	372	88.2
	Pedagogy	40	9.5
	Others	10	2.4
2.7 English certification			
	TEM 8	176	41.7
	TEM 4	159	37.7
	None	87	20.6
2.8 Leader of PLC			
	Yes	76	18.0
	No	346	82.0

4.1.1 State of PLC Participation

This section consists of 3 sub-sections: 4.1.1.1) type of PLC participation, 4.1.1.2) levels of PLC participation, 4.1.1.3) level of participation by PLC attributes. The findings are as follows:

According to the tradition of teaching organization in primary and secondary schools in China, teaching research groups, collective lesson preparation groups and grade groups exist in each school as traditional teaching management organization. With the development of Internet technology, instant messaging and mobile network technology, subject-based QQ groups and Wechat groups began to emerge as a new online learning community, and were accepted by schools and

teachers. At present, teachers have the highest degree of participation in teaching research groups, collective lesson preparation groups and grade groups, while subject-based QQ groups and Wechat groups have slightly lower degree of participation than traditional professional learning community. As a new type of professional learning community, teacher studio begins to appear in some schools. The participation rate of regional professional learning community is the lowest, which is only 15.6%. (Table 4.2)

Table 4.2 Percentage of teachers by types of PLC participation

	Type of PLC	N	%
1	Teaching research groups	333	78.9
2	Collective lesson preparation groups	396	93.8
3	Grade groups	278	65.9
4	Teacher studio	73	17.3
5	Regional PLC	66	15.6
6	Subject-based QQ/Wechat groups	310	73.5
7	University-based	0	0

Total N= **422**

4.1.1.1 Type of PLC Participation

After summarizing the development of effective PLCs in Changchun, this study analyzed the participation of six different forms of PLCs by using descriptive statistics to investigate the differences between different schools and teachers'

background factors on teachers' TPD involvements in PLCs.

Table 4.3 Types of PLC participation by school size

	Type of PLC	Small (Total 33)		Medium (Total 159)		Large (Total 230)		Overall (Total 422)	
		N	%	N	%	N	%	N	%
1	Teaching research groups	24	72.7	139	87.4	170	73.9	333	78.9
2	Collective lesson preparation groups	29	87.9	146	91.8	221	96.1	396	93.8
3	Grade groups	20	60.6	122	76.7	136	59.1	278	65.9
4	Teacher studio	14	42.4	19	11.9	40	17.4	73	17.3
5	Regional PLC	5	15.2	14	8.8	47	20.4	66	15.6
6	Subject-based QQ/Wechat groups	19	57.6	106	66.7	185	80.4	310	73.5

Table 4.4 Types of PLC participation by school reputation and resources

	Type of PLC	Poor (Total 217)		Average (Total 82)		Excellent (Total 123)		Overall (Total 422)	
		N	%	N	%	N	%	N	%
1	Teaching research groups	178	82	77	93.9	78	63.4	333	78.9
2	Collective lesson preparation groups	196	90.3	82	100	118	95.9	396	93.8
3	Grade groups	160	73.7	49	59.8	69	56.1	278	65.9
4	Teacher studio	38	17.5	5	6.1	30	24.4	73	17.3
5	Regional PLC	37	17.1	14	17.1	15	12.2	66	15.6
6	Subject-based QQ/Wechat groups	168	77.4	54	65.9	88	71.5	310	73.5

Table 4.5 Types of PLC participation by teaching experiences

Type of PLC	1-5 (Total 52)		6-10 (Total 53)		11-15 (Total 125)		15 up (Total 192)		Overall (Total 422)	
	N	%	N	%	N	%	N	%	N	%
1 Teaching research groups	42	80.8	38	71.7	90	72	163	84.9	333	78.9
2 Collective lesson preparation groups	43	82.7	53	100	121	96.8	179	93.2	396	93.8
3 Grade groups	29	55.8	44	83	77	61.6	128	66.7	278	65.9
4 Teacher studio	10	19.2	10	18.9	9	7.2	44	22.9	73	17.3
5 Regional PLC	4	7.7	14	26.4	13	10.4	35	18.2	66	15.6
6 Subject-based QQ/Wechat groups	47	90.4	29	54.7	96	76.8	138	71.9	310	73.5

It can be seen from Table 4.3, Table 4.4 and Table 4.5 that teacher's teaching experiences have an impact on the participation degree of teachers' involvements in PLCs. The participation of teachers with more than 15 years teaching experience is relatively high, while that of teachers with 6-10 years teaching experience is relatively low in Teaching research groups. Teachers with 6-15 years teaching experiences have a relatively high degree of participation in Collective lesson preparation groups. Among the activity participation degree of Grade groups, the participation degree of teachers with 6-10 years teaching experiences is relatively

high. In Teacher studio, teachers with 1-5 years teaching experiences and more than 15 years teaching experiences have higher participation degree than those in the intermediate stage. The participation degree of teachers with 6-10 years teaching experiences is significantly higher than that of other teachers in Regional PLC. In the activity participation degree of Subject-based QQ/Wechat groups, teachers with 1-5 years teaching experiences is significantly higher than that of teachers with other teaching ages. Among the factors of school background, the participation of teachers in medium-sized schools with average resources is relatively high in Teaching research groups. The participation of teachers from schools with average resources is significantly higher than that of teachers from excellent schools and ordinary schools. School size has no significant influence on the degree of participation of Collective lesson preparation groups. The participation of teachers from ordinary schools and intermediate schools is relatively high in Grade groups. In Teacher studio, the participation degree of excellent schools and small-sized schools is higher than that of other schools. The participation degree of large-sized schools is higher than that of other schools in Regional PLC. School resources did not have a significant impact on the participation degree of Regional PLC. In Subject-based QQ/Wechat groups, the

participation of ordinary schools and large-sized schools is higher than that of other schools.

Based on the research results, factors affecting teachers' involvements in PLCs are comprehensively summarized in this study as shown in Table 4.6. In terms of age, the participation of young teachers aged 21-25 years in Collective lesson preparation groups, Teacher studio, and Subject-based QQ/Wechat group is significantly higher than that of other age groups. However, in Teaching research groups and Collective lesson preparation groups, the participation of teachers' aged 41-50 is significantly higher than that of other age groups. Teachers with 6-10 years teaching experiences have a high degree of participation in Collective lesson preparation groups, Grade groups and Regional PLC. Teachers with more than 15 years teaching experiences have a high degree of participation in Teaching research group and Teacher studio. Teachers with bachelor degree in Teaching research groups, Collective lesson preparation groups, Grade groups and Subject-based QQ/Wechat groups is relatively high. Teachers with master degree have a higher rate of participation in Teachers studio and Subject-based QQ/Wechat groups than other groups. Among the school resources, the participation of teachers from schools with average resources in Teaching research groups and Collective lesson preparation

groups is higher than that of teachers in other schools. The participation of ordinary schools in Grade groups and Subject-based QQ/Wechat groups is higher. In terms of school size, large-sized schools' teachers have a higher participation rate in the Regional PLC, Subject-based QQ/Wechat groups and intermediate-sized school teachers have a higher participation rate in Teaching research groups and Grade groups.

Table 4.6 Types of PLC participation of teachers by teacher backgrounds

		Teaching research groups	Collective lesson preparation groups	Grade groups	Teacher studio	Regional PLC	Subject-based QQ/ Wechat groups
1. Age							
	21-25		√		√		√
	26-30	√					
	31-40					√	
	41-50	√	√				
	51-60				√		
2. Teaching experience							
	1-5				√		
	6-10		√	√		√	
	10-15		√				
	15 up	√			√		
3. Degree							
	Master				√		√
	Bachelor	√	√	√			√
	Junior College				√		
4. School reputation and resources							
	Excellent				√		
	Average	√	√				
	Poor			√			√
5. School size							
	Large					√	√
	Medium	√		√			
	Small				√		

According to the research results, in the development status of Changchun PLCs, the traditional Teaching research groups and Collective lesson preparation groups are still the main forms, and Subject-based QQ/Wechat groups have become an important network virtual form online with the development of Times. Among the three traditional organizational forms with the characteristics of PLC, Teaching research groups, Collective lesson preparation groups and Grade groups, as a new PLC, Teacher studio plays a more significant role in TPD. On the one hand, the Teacher studio attracts the participation of teachers with junior college degree. On the other hand, it gathers the experts with senior teaching experiences, novice teacher, teachers with master degree and junior college degree.

4.1.1.2 Levels of PLC Participation

In this study, description and analysis were made based on the results of the questionnaire on the general situation of English teachers' PLC and TPD in Changchun high schools according to the current situation in the whole and the various levels. This paper analyzes and explains the current situation of English teachers' effective PLC and TPD in Changchun high schools.

Based on the questionnaire of TPLC instrument by Olivier, Hipp & Huffman, the study investigated the current situation of the high school teachers in

Changchun in the effective PLCs from four attributes such as supportive and shared leadership, collective creativity, shared values and vision and shared personal practice.

We use the adopted questionnaire "The Questionnaire of the English Teachers' PLC and TPD" as the research tool. The questionnaire is designed by the Five-Points Likert, in which the respondent chooses the “very consistent” to get 5 points, the “consistent” 4 points, and the “partly consistent” 3 points, “inconsistent” 2 points and “quite inconsistent” 1 point and it can indicate the scoring of Chinese high school English teachers' learning and TPD in an effective PLC. The average value of the scale is 3 points. The higher the score is, the higher English teachers' recognition of the PLC is and the more positively they behave, and vice versa.

Hord proposed five attributes of effective PLC, but this study divides the process of effective PLCs into four attributes, which are " supportive and shared leadership", "collective creativity", "shared values and vision" and "shared personal practice". The “supportive conditions” attribute was dropped from the study with the reason that there are too few explanations for it after translation in Chinese and most teachers have misunderstandings of it. Therefore, we didn’t obtain meaningful feedback for this attribute. The results of the analysis are shown in Table 4.7.

Table 4.7 Level of participation of Chinese high school English teachers in PLC

	Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
1	Supportive and shared leadership	8	5.00	1.00	4.00	3.50	3.35	.98	-.46	-.48
2	Collective creativity	9	5.00	1.67	4.00	3.89	3.75	.76	-.544	.071
3	Shared values and vision	3	5.00	1.00	3.67	3.67	3.47	.86	-.502	.002
4	Shared personal practice	5	5.00	1.00	4.00	4.00	3.87	.80	-1.01	1.607
	Overall	25	4.95	1.52	3.98	3.73	3.62	.77	-.690	.422

As a whole, the average level of PLC participation is relatively moderate (3.62). The attribute "shared personal practice" (M=3.87) showed the highest level, followed by "collective creativity" (M=3.75), and "shared values and vision" (M=3.47). The “supportive and shared leadership” (M=3.35) is the lowest.

Table 4.8 Level of participation of teachers by school size

	Variables	Small		Medium		Large		Total	
		M	SD	M	SD	M	SD	M	SD
1	Supportive and shared leadership	2.92	1.10	2.99	.98	3.65	.86	3.35	.98
2	Collective creativity	3.63	0.88	3.51	.83	3.94	.65	3.75	.76
3	Shared values and vision	3.24	1.12	3.21	.93	3.67	.72	3.47	.86
4	Shared personal practice	3.40	1.40	3.64	.82	4.10	.59	3.87	.80
	Overall	3.30	1.11	3.36	.80	3.85	.60	3.62	.77

Table 4.9 Level of participation of teachers by school reputation and resources

	Variables	Poor		Average		Excellent		Total	
		M	SD	M	SD	M	SD	M	SD
1	Supportive and shared leadership	3.36	.89	3.47	1.08	3.23	1.07	3.35	.98
2	Collective creativity	3.83	.74	3.96	.66	3.48	.81	3.75	.76
3	Shared values and vision	3.59	.80	3.65	.73	3.12	.97	3.47	.86
4	Shared personal practice	3.93	.64	4.04	.96	3.65	.91	3.87	.80
	Overall	3.70	.68	3.79	.75	3.37	.88	3.62	.77

Table 4.10 Level of participation of teachers by teaching experiences

	Variables	1-5		6-10		11-15		15up		Total	
		M	SD	M	SD	M	SD	M	SD	M	SD
1	Supportive and shared leadership	4.08	1.12	3.72	.74	3.36	.72	3.03	1.01	3.35	.98
2	Collective creativity	4.14	.81	4.04	.54	3.71	.66	3.60	.82	3.75	.76
3	Shared values and vision	4.10	1.04	3.62	.67	3.53	.63	3.21	.9	3.47	.86
4	Shared personal practice	4.44	.84	3.94	.58	3.77	.50	3.76	.94	3.87	.80
	Overall	4.19	.91	3.85	.54	3.60	.55	3.42	.82	3.62	.77

After analyzing each variables with SPSS 24.0, we get the average score and standard deviation analysis result, the option "when I need help, leaders can help me solve problems actively" got the lowest score, only 3.14; "I can discuss the strategies with my colleagues to enhance students' learning in private" got the highest, reaching 4.02. The detailed analysis of each variable is as follows:

4.1.1.3 Level of Participation by PLC Attributes

4.1.1.3.1 PLC Participation in Supportive and Shared Leadership

From Table 4.11, it is shown that the average score of the " supportive and shared leadership" in the effective PLC of English teachers is between 3.14-3.68, and the standard deviation is between .988-1.260. Including, the score of "collective discussion and democratic decision-making is adopted in PLCs management" was the highest, reaching 3.68. And the score of "when I need help, the leader can help me solve problems actively" is the lowest, only 3.14.

Table 4.11 Level of participation in " Supportive and Shared Leadership"

Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
Supportive and Shared leadership	422	5	1	4	3.5	3.35	.98	-.460	-.481
1 Collective discussion and democratic decision-making is adopted in PLCs management	422	5	1	4	4	3.68	.99	-.522	-.146
2 The leader can take advice from other teachers to make decisions.	422	5	1	4	4	3.18	1.21	-.506	-.884
3 The leader can participate in teachers' discussion equally and actively.	422	5	1	4	4	3.27	1.25	-.444	-.858
4 The leader of PLCs is proactive and addresses areas where support is needed.	422	5	1	4	3	3.14	1.23	-.202	-1.02
5 The leader of PLCs shared responsibility and rewards for innovative actions.	422	5	1	4	3	3.21	1.16	-.381	-.752
6 Opportunities are provided for teachers to initiate change.	422	5	1	4	4	3.20	1.26	-.428	-.982
7 Decision-making takes place through committees and communication across grade and subject areas.	422	5	1	4	4	3.54	1.08	-.737	-.112
8 Teachers have accessibility to key information.	422	5	1	4	4	3.53	1.10	-.667	-.228

4.1.1.3.2 PLC Participation in Collective Creativity

It is shown from Table 4.12 that the average scores of English teachers' "collective creativity" in effective professional learning community are between 3.56-3.97, and the standard deviation is between .888-1.077. The score of "Teachers plan and work together to search for solutions to address their teaching needs" is the highest, reaching 3.97. The score of "A variety of opportunities and structures exist for collective learning through open dialogue" is the lowest, only 3.56.

Table 4.12 Level of participation in the "Collective Creativity"

	Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
Collective Creativity		422	5	1.67	4	3.89	3.75	.76	-.544	.071
1	Collegial relationships exist among teachers that reflect commitment to their professional development.	422	5	1	4	4	3.65	.989	-.596	-.191
2	Teachers plan and work together to search for solutions to address their teaching needs.	422	5	1	4	4	3.97	.919	-1.041	1.184
3	Teachers learn together and apply new knowledge to solve problems.	422	5	2	4	4	3.92	.888	-.532	-.398
4	Teachers collaboratively analyze student work to improve teaching and learning.	422	5	1	4	4	3.78	.897	-.843	.820
5	Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.	422	5	1	4	4	3.74	.917	-.769	.523
6	A variety of opportunities and structures exist for collective learning through open dialogue.	422	5	1	4	4	3.56	1.077	-.596	-.316
7	Professional development focuses on teaching and learning.	422	5	1	4	4	3.85	.955	-1.081	1.188
8	Teachers are committed to programs that enhance learning.	422	5	1	4	4	3.63	.944	-.707	.157
9	Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.	422	5	1	4	4	3.69	.938	-.890	.837

4.1.1.3.3 PLC Participation in Shared Values and Vision

From Table 4.13, it is shown that the average scores of English teachers' experiences in the “shared values and vision” in the effective professional learning community are between 3.73-3.93, and the standard deviation is between .931-1.087. "Teachers share visions for school improvement that have an undeviating focus on student learning." and "Shared values support norms of behavior that guide decisions about teaching and learning" enjoys a score of 3.93. And "A collaborative process exists for developing a shared sense of values among teachers" has only 3.73, the lowest score in all variables, which is closely related to the current evaluation system based on scores of national college examination and the fierce competition in China's universities.

Table 4.13 Level of participation in the "Shared Values and Vision"

Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
Shared Value and Vision	422	5	1	3.67	3.67	3.47	.86	-.502	.002
1 A collaborative process exists for developing a shared sense of values among teachers.	422	5	1	4	4	3.73	1.08	-.898	.371
2 Shared values support norms of behavior that guide decisions about teaching and learning.	422	5	1	4	4	3.60	1.09	-.576	-.271
3 Teachers share visions for school improvement that have an undeviating focus on student learning.	422	5	1	3	3	3.08	1.20	-.042	-.827

4.1.1.3.4 PLC Participation in Shared Personal Practice

From Table 4.14, it is shown that the average scores of English teachers' "shared personal practice" in the effective PLC is between 3.69-4.02, and the standard deviation is between .871-1.056. Among them, "Teachers informally share ideas and suggestions for improving student learning" enjoys the highest score, 4.02. The score of "Teachers provide feedback to peers related to instructional practices" is the lowest, only 3.69.

Table 4.14 Level of participation in "Shared Personal Practice"

Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
Shared personal practice	422	5	1	4	4	3.87	.80	-1.01	1.61
1 Opportunities exist for teachers to observe peers and offer encouragement.	422	5	4	4	4	3.97	.87	-.897	.899
2 Teachers provide feedback to peers related to instructional practices.	422	5	4	4	4	3.69	1.00	-.661	-.131
3 Teachers informally share ideas and suggestions for improving student learning.	422	5	4	4	4	4.02	.89	-1.12	1.695
4 Opportunities exist for coaching and mentoring.	422	5	4	4	4	3.91	.91	-.933	1.071
5 Individuals and teams have the opportunity to apply learning and share the results of their practices.	422	5	4	4	4	3.83	1.06	-.999	.561

In sum, English teachers in Changchun are active in the evaluation of PLC. Among them, the scores of "shared personal practice" and "collective creativity" scored higher. After analyzing the details of each variable, it is found that learning

experiences and activities in the professional learning community of the city's English teachers highlight the following characteristics.

At the level of learning activities, it aims to work together to accomplish certain tasks (Teachers plan and work together to search for solutions to address their teaching needs. M=3.97), to solve the problem of students' learning (Teachers collaboratively analyze student work to improve teaching and learning." M=3.78). However, due to the limitation of the questionnaires, no further examination is needed for teachers' own learning and the need to enhance their professional knowledge. This issue will be further investigated in subsequent interviews.

At the learning strategies, teachers prefer informal cooperation rather than open cooperation. This score of “Teachers informally share ideas and suggestions for improving student learning. (M=4.02)” is the highest in the overall survey. It is speculated that teachers' learning strategies focus on informal discussion. The formal cooperation of “Opportunities exist for teachers to observe peers and offer encouragement. (M=3.97)” scores less than informal cooperation. The learning strategies and effects in formal group activities need further interviews.

At the variable of “supportive and shared leadership”, English teachers' evaluation is generally low. After a single analysis of the "supportive and shared

leadership" and "shared values and vision", it is found that the city's PLC has a low evaluation on the leadership style and organizational decision-making. Leaders give little support for TPD. “The leader can take advice from other teachers to make decisions. (M=3.18)" and “The leader of PLCs is proactive and addresses areas where support is needed. (M=3.14)", "Opportunities are provided for teachers to initiate change. (M=3.20)” In addition, the evaluation of joint decision-making is relatively low, "A collaborative process exists for developing a shared sense of values among teachers. (M=3.73)" The concept of "vision" and "democratic decision" is rooted in the Western cultural backgrounds. In Chinese context, teachers' understanding of this concept still varies but these concepts are indispensable to the organizational characteristics of PLC. The interpretation and behavior of teachers themselves have an impact on the final learning outcomes. Therefore, researchers will conduct triangulation in interviews. First, the relevant government and school documents are traced and compared with those in the Western context. In addition, the question of conceptual understanding will be added to in-depth interviews.

In summary, teachers’ PLCs in the city have possessed the organizational characteristics of the international definition. However, under the cultural background of Chinese bureaucratic system of centralized democracy, the organizational

characteristics of PLC and the content as well as strategies of professional learning communities are still to be further studied.

4.1.2 TPD of Teachers' Participation in PLC

4.1.2.1 Level of TPD (learning outcomes) in PLC

From Table 4.15, we can see that the average score of English teachers' TPD experiences are between 3.78-3.91, and the standard deviation is between .954-1.042. Among them, the score of "professional recognition: My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs" is 3.91, the highest, while the score of "Professional identity: My Knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs" is only 3.78, the lowest.

Table 4.15 Levels of teachers' learning outcomes in PLC

	Variables	N	Max	Min	Mode	MED	Mean	SD	Sk	Ku
1	Linguistic knowledge	422	5	1	4	3	3.84	.95	-.89	.62
2	Pedagogical knowledge	422	5	1	4	3	3.84	.96	-1.13	1.30
3	Teaching techniques/tools	422	5	1	4	3	3.88	.96	-1.12	1.31
4	Information of student background	422	5	1	4	3	3.91	1.02	-1.01	.70
5	Attitudes toward change agents	422	5	1	4	3	3.78	1.04	-.86	.47
	Overall	422	5	1	4	3	3.85	.91	-1.11	1.22

Table 4.16 Teachers' learning outcomes by school size

	Variables	Small		Medium		Large		Total	
		M	SD	M	SD	M	SD	M	SD
1	Linguistic knowledge	3.42	1.42	3.62	.88	4.05	.87	3.84	.95
2	Pedagogical knowledge	3.58	1.42	3.67	.98	3.99	.83	3.84	.96
3	Teaching techniques/tools	3.58	1.42	3.61	.99	4.12	.79	3.88	.96
4	Information of student background	3.58	1.42	3.70	1.12	4.10	.84	3.91	1.02
5	Attitudes toward change agents	3.42	1.42	3.52	1.02	4.00	.94	3.78	1.04
	Overall	3.30	1.11	3.36	.80	3.85	.60	3.85	.91

Table 4.17 Teachers' learning outcomes by school reputation and resources

	Variables	Poor		Average		Excellent		Total	
		M	SD	M	SD	M	SD	M	SD
1	Linguistic knowledge	3.98	.83	4.04	1.01	3.46	1.03	3.84	.95
2	Pedagogical knowledge	4.02	.77	3.91	1.01	3.46	1.10	3.84	.96
3	Teaching techniques/tools	4.02	.83	4.10	.98	3.50	1.07	3.88	.96
4	Information of student background	4.13	.85	4.04	1.01	3.42	1.14	3.91	1.02
5	Attitudes toward change agents	3.93	.87	3.85	1.03	3.46	1.24	3.78	1.04
	Overall	3.70	.68	3.79	.75	3.37	.88	3.85	.91

Table 4.18 Teachers' learning outcomes by teaching experiences

	Variables	1-5		6-10		11-15		15up		Total	
		M	SD	M	SD	M	SD	M	SD	M	SD
1	Linguistic knowledge	4.42	.92	4.26	.76	3.67	.77	3.67	1.02	3.84	.95
2	Pedagogical knowledge	4.25	.88	4.06	.80	3.74	.75	3.72	1.10	3.84	.96
3	Teaching techniques/tools	4.42	.92	4.08	.68	3.74	.75	3.78	1.10	3.88	.96
4	Information of student background	4.52	.92	3.98	.75	3.94	.81	3.70	1.16	3.91	1.02
5	Attitudes toward change agents	4.33	1.18	3.96	.73	3.87	.80	3.52	1.14	3.78	1.04
	Overall	4.19	.91	3.85	.54	3.60	.55	3.42	.82	3.85	.91

4.2 Effects of PLC Participation on TPD

4.2.1 Comparison of PLC Participation Level by School/Teacher Contexts

The purpose of this section is to investigate the differences of effective PLC evaluation from teachers with different backgrounds through the independent sample t-test and ANOVA analysis methods.

We take teachers' background information like "age, teaching experience, academic degrees, whether or not graduates from the normal university, major, English proficiency, school size, school reputation and resources" as the independent variable, and "supportive and shared leadership, collective creativity, shared values

and vision and shared personal practice" as the dependent variables, to do the independent sample t-test and ANOVA analysis. If the ANOVA analysis method shows that it has significant effects, than the LSD method will be applied to compare the differences of English teachers with different backgrounds in PLC.

4.2.1.1 Age

In this subsection, ANOVA analysis is made to investigate differences in the effective PLC evaluation for teachers of different ages. The specific results are shown in Table 4.19.

Table 4.19 ANOVA of PLC levels of teachers with different ages

	Variables	Age	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 21-25	10	4.38	.00	4	8.11	9.05***	1>2
		G2 26-30	52	3.72	1.23	417	.896		2>3
		G3 31-40	221	3.40	.89	421			3>4
		G4 41-50	120	3.06	.89				4>5
		G5 51-60	19	2.88	1.28				
2	Collective creativity	G1 21-25	10	3.78	.12	4	3.96	7.11***	
		G2 26-30	52	4.03	.87	417	.557		2>4
		G3 31-40	221	3.84	.68	421			3>4
		G4 41-50	120	3.46	.78				
		G5 51-60	19	3.87	1.02				5>4
3	Shared values and vision	G1 21-25	10	3.67	.00	4	3.58	4.95*	
		G2 26-30	52	3.74	1.03	417	.724		2>4
		G3 31-40	221	3.53	.82	421			3>4
		G4 41-50	120	3.19	.84				
		G5 51-60	19	3.58	.95				
4	Shared personal	G1 21-25	10	3.79	.53	4	4.41	7.13***	2>1
		G2 26-30	52	4.34	.93	417	.618		2>3

Table 4.19 (continued)

Variables	Age	N	M	SD	df	MS	F	Post Hoc
practice	G3 31-40	221	3.86	.69	421			3>4
	G4 41-50	120	3.67	.83				
	G5 51-60	19	4.11	1.15				5>4
	G1 21-25	10	3.94	.28	4	4.02	7.12***	1>4
	G2 26-30	52	3.97	.98	417	.565		2>3
Overall	G3 31-40	221	3.67	.69	421			3>4
	G4 41-50	120	3.36	.74				
	G5 51-60	19	3.66	.99				

*Note: ***means that the significant difference of mean difference was .001. Ns, indicates no significant difference.*

It is shown from Table 4.19 that there are significant differences (F=7.12, p< .001) in the overall score of PLC and TPD evaluation for teachers of different ages, and then using LSD method we find that young teachers at the age of 21-25 is significantly higher than teachers of 41-50. The average of teachers' aged 26-30 is significantly higher than that of English teachers aged 31-40 and 41-50. ANOVA analysis and LSD comparison are conducted in each aspect of test.

At the level of "supportive and shared leadership", the age groups are rather different. The average of teachers of 21-25 is higher than that of the other four groups. With the increasing of age, the average score of all age groups gradually decreases, which indicates that the higher the teacher's age is, the lower the evaluation of the supportive and shared leadership becomes. At the level of "collective creativity", the evaluation of teachers at the age of 41-50 is significantly lower than that of group

26-30, 31-40 and 51-60. At the level of "shared values and vision", the evaluation of teachers at the age of 41-50 is significantly lower than that of 26-30 and 31-40. At the level of "shared personal practice", the average score of teachers' aged 26-30 is significantly higher than that of teachers aged 21-25, 31-40, and 41-50. And the evaluation of teachers at 51-60 is significantly higher than that at 41-50.

4.2.1.2 Teaching experience

In this part, ANOVA analysis is used to investigate the difference in the effective PLC of teachers with different teaching experiences. The specific results are shown in Table 4.20.

Table 4.20 ANOVA of PLC levels of teachers with different teaching experiences

	Variables	Teaching experience	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 1-5	52	4.08	1.12	3	18.2	21.65***	1>2
		G2 6-10	53	3.72	.74	418	.841		2>3
		G3 10-15	125	3.36	.72	421			3>4
		G4 15 up	192	3.03	1.01				
2	Collective creativity	G1 1-5	52	4.14	.81	3	5.74	10.40***	1>3
		G2 6-10	53	4.04	.54	418	.553		1>4
		G3 10-15	125	3.71	.66	421			2>3
		G4 15 up	192	3.60	.82				2>4
3	Shared values and vision	G1 1-5	52	4.10	1.04	3	11.6	17.28***	1>2
		G2 6-10	53	3.62	.67	418	.673		2>3
		G3 10-15	125	3.53	.63	421			3>4
		G4 15 up	192	3.21	.90				
4	Shared	G1 1-5	52	4.44	.84	3	6.84	11.21***	1>2

Table 4.20 (continued)

Variables	Teaching experience	N	M	SD	df	MS	F	Post Hoc
personal practice	G2 6-10	53	3.94	.58	418	.610		1>3
	G3 10-15	125	3.77	.50	421			1>4
	G4 15 up	192	3.76	.94				
Overall	G1 1-5	52	4.19	.91	3	9.01	16.78***	1>2
	G2 6-10	53	3.85	.54	418	.537		2>3
	G3 10-15	125	3.60	.55	421			3>4
	G4 15 up	192	3.42	.82				

*Note: *. The significant level of Mean difference was*.001, *Ns represents no significant difference.*

It is shown from Table 4.20 that there is a significant difference ($p < .001$) in the overall evaluation of PLC and TPD for teachers with different teaching experiences, and then using the LSD method, it is found that the evaluation of teachers with 1-5 years' teaching experience is significantly higher than that of other teachers. With the increasing of teaching experience, teachers' evaluation of effective PLC and TPD becomes lower. ANOVA analysis and LSD comparison were conducted in each aspect.

In the level of "supportive and shared leadership" and "shared values and vision", the results are the same as those of the overall test. With the increase of teaching experience, the corresponding evaluation is lower. At the level of "collective creativity", teachers with teaching experiences of 1-5 years and 6-10 years are significantly higher than those of 10-15 years or more than 15 years. However, there is no significant difference among teachers with 1-5 and 6-10 years' teaching

experiences, or 10-15 and more than 15 years' teaching experiences. In the level of "shared personal practice", teachers with 1-5 years' teaching experience were significantly higher than other groups. There was no significant difference among teachers with other teaching experience.

4.2.1.3 Education Level

In this part, ANOVA analysis is used to investigate the differences on the evaluation of effective PLC of teachers with different academic degrees. The specific results are shown in Table 4.21.

Table 4.21 ANOVA of PLC levels of teachers with different academic degrees

	Variables	Academic degree	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 Master	96	3.30	1.27	2	7.11	7.60***	1>3
		G2 Bachelor	322	3.38	.86	419	.935		2>3
		G3 Junior college	4	1.50	.00	421			
2	Collective creativity	G1 Master	96	3.66	.98	2	6.97	12.47***	1>3
		G2 Bachelor	322	3.80	.67	419	.559		2>3
		G3 Junior college	4	2.00	.00	421			
3	Shared values and vision	G1 Master	96	3.31	1.23	2	6.13	8.45***	2>1
		G2 Bachelor	322	3.53	.71	419	.725		2>3
		G3 Junior college	4	2.00	.00	421			1>3
4	Shared personal practice	G1 Master	96	3.88	1.02	2	7.08	11.35***	1>3
		G2 Bachelor	322	3.89	.71	419	.624		2>3
		G3 Junior college	4	2.00	.00	421			
	Overall	G1 Master	96	3.54	1.03	2	6.63	11.65***	1>3
		G2 Bachelor	322	3.67	.65	419	.569		2>3
		G3 Junior college	4	1.90	.00	421			

*Note: ***. The significant level of Mean difference was .001. Ns means no significant difference.*

It is shown from Table 4.21 that there is a significant difference ($p < .001$) on the evaluation of effective PLC of teachers with different academic degrees. With the LSD method, it is found that the evaluation of Junior college teachers is significantly lower than that of other teachers. However, there is no significant difference between teachers with the bachelor's and master's degree. ANOVA analysis and LSD comparison were conducted in each aspect.

The evaluation of teachers from junior colleges is significantly lower than that of teachers with master's degree and bachelor's degree, but there is no significant difference in the latter two. In the level of "shared values and vision", the evaluation of teachers with bachelor's degree is significantly higher than that of teachers with master's degree and junior college's degree. Among them, the evaluation of teachers with master's degree is significantly higher than that of those with junior college's degree. Because there are only 4 teachers with junior college's degree in the sample, the impact of junior college education on teacher evaluation is difficult to promote.

In this study, we also use t-test to investigate the differences of teachers that whether or not graduating from the normal university in the effective PLC and the results of the statistical analysis are as shown in Table 4.22.

Table 4.22 Analysis of PLC levels of teachers with different type of graduation

	Variables	Whether or not graduate from normal university	N	M	SD	t	Comparison
1	Supportive and shared leadership	G1 Yes	368	3.26	.98	-5.35*	2>1
		G2 No	54	3.90	.79		
2	Collective creativity	G1 Yes	368	3.72	.78	-2.96*	2>1
		G2 No	54	4.00	.64		
3	Shared values and vision	G1 Yes	368	3.44	.88	-1.46	Ns
		G2 No	54	3.63	.79		
4	Shared personal practice	G1 Yes	368	3.85	.82	-1.61	Ns
		G2 No	54	4.04	.68		
	Overall	G1 Yes	368	3.58	.78	-3.00*	2>1
		G2 No	54	3.89	.68		

*Note: *. The significance of mean difference was .05. Ns means no significant difference.*

As shown in Table 4.22, the overall t-test (t=-3.004, p< .05) shows significant differences on the whole, indicating that there are significant differences in effective PLC evaluation of teachers who graduate from different universities. The average scores of teachers from non-normal university in the overall evaluation are higher than that of the teachers who graduate from the normal university, indicating that the former has higher evaluation in PLC and TPD than the latter.

On the various levels of tests, the scores of "supportive and shared leadership" (t=-5.352, p< .05) and "collective creativity" (t=-2.962, p< .05) are significantly different among the teachers who graduated from different universities. According to the average comparison, the scores of graduating from non-normal

university are higher than those of normal university. As for "shared values and vision" and "shared personal practice", there is no significant difference.

4.2.1.4 Major

In this part, ANOVA analysis is used to investigate the differences in the evaluation of effective PLC with teachers of different majors. The specific results are shown in Table 4.23.

Table 4.23 ANOVA of PLC levels of teachers with different majors

	Variables	Major	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 English	372	3.37	.98	2	3.76	3.95*	1>3
		G2 Pedagogy	40	3.30	.99	419	.951		2>3
		G3 Others	10	2.50	.00	421			
2	Collective creativity	G1 English	372	3.80	.76	2	4.17	7.27*	1>3
		G2 Pedagogy	40		.74	419	.573		2>3
		G3 Others	10	2.94	.76	421			
3	Shared values and vision	G1 English	372	3.49	.88	2	.893	1.19	Ns
		G2 Pedagogy	40	3.33	.85	419	.750		
		G3 Others	10	3.16	.18	421			
4	Shared personal practice	G1 English	372	3.88	.83	2	2.41	3.73*	1>3
		G2 Pedagogy	40	3.98	.65	419	.646		2>3
		G3 Others	10	3.21	.38	421			
	Overall	G1 English	372	3.65	.77	2	3.27	5.59*	1>3
		G2 Pedagogy	40	3.57	.76	419	.585		2>3
		G3 Others	10	2.84	.25	421			

*Note: *. The significance of mean difference was.05. Ns represents no significant difference.*

It is shown from Table 4.23 that there is a significant difference ($p < .05$)

in the PLC and TPD evaluation of teachers graduating from different majors. Using the LSD method, it is found that the evaluation of teachers in other majors is significantly lower than that in English and pedagogy. However, there is no significant difference between English and pedagogy. ANOVA analysis and LSD comparison were conducted in each aspect.

In terms of " supportive and shared leadership", "collective creativity" and "shared personal practice", the results are the same as those of the overall test. The evaluation of graduates from other majors is significantly lower than that of teachers in English and pedagogy. But there was no significant difference between the latter two.

4.2.1.5 English Proficiency

In this part, ANOVA analysis is used to investigate the differences of teachers with different English certificates. The results are shown in Table 4.24.

Table 4.24 ANOVA of PLC levels of teachers with different English certificates

	Variables	English certificate	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 TEM 8	176	3.53	.99	2	6.54	6.98*	1>2
		G2 TEM 4	159	3.28	.89	419	.938		
		G3 None	87	3.08	1.05	421			1>3
2	Collective creativity	G1 TEM 8	176	3.92	.77	2	4.06	7.08*	1>2
		G2 TEM 4	159	3.62	.71	419	.573		
		G3 None	87	3.66	.81	421			1>3

Table 4.24 (continued)

	Variables	English certificate	N	M	SD	df	MS	F	Post Hoc
3	Shared values and vision	G1 TEM 8	176	3.64	.90	2	4.91	6.72*	1>2
		G2 TEM 4	159	3.38	.78	419	.731		
		G3 None	87	3.28	.89	421			1>3
4	Shared personal practice	G1 TEM 8	176	4.03	.73	2	3.94	6.17*	1>2
		G2 TEM 4	159	3.74	.70	419	.639		
		G3 None	87	3.79	1.06	421			1>3
	Overall	G1 TEM 8	176	3.78	.80	2	4.09	7.05*	1>2
		G2 TEM 4	159	3.53	.67	419	.581		
		G3 None	87	3.46	.85	421			1>3

*Note: *. The significance of mean difference was.05. Ns represents no significant difference.*

It is shown from Table 4.24 that there is a significant difference ($p < .05$) in the evaluation of effective PLC of teachers with different English certificates, and by using the LSD method, it is found that the evaluation of teachers with TEM-8 (Test for English Major) is significantly higher than that of teachers with TEM-4 or none certificate. Evaluation of teachers with TEM-8 is significantly better than that of teachers with TEM-4. But there is no significant difference between teachers with these two certificates. ANOVA analysis and LSD comparison were conducted in each aspect.

In " supportive and shared leadership", "collective creativity" and "shared personal practice" are the same as the results of the overall analysis. The evaluation of teachers with TEM 8 is significantly higher than that of TEM 4 or none certificate.

Evaluation of teachers TEM 8 is significantly better than that of teachers with TEM 4. But there is no significant difference among teachers with both two certificates.

4.2.1.6 School reputation and resources

In this part, ANOVA analysis is used to investigate the differences of teachers from schools with different reputation and resources in PLC. The results are shown in Table 4.25.

Table 4.25 ANOVA of PLC levels of teachers with different school reputation and resources

	Variables	School reputation and resources	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 Excellent	123	3.23	1.07	2	1.51	1.57	Ns
		G2 Average	82	3.47	1.08	419	.962		
		G3Poor	217	3.36	.89	421			
2	Collective creativity	G1 Excellent	123	3.48	.81	2	6.92	12.37*	2>1
		G2 Average	82	3.96	.66	419	.559		
		G3 Poor	217	3.83	.74	421			3>1
3	Shared values and vision	G1Excellent	123	3.12	.97	2	10.3	14.60*	2>1
		G2 Average	82	3.65	.73	419	.705		
		G3 Poor	217	3.59	.80	421			3>1
4	Shared personal practice	G1 Excellent	123	3.65	.91	2	4.64	7.29*	2>1
		G2 Average	82	4.04	.96	419	.636		
		G3 Poor	217	3.93	.64	421			3>1
	Overall	G1 Excellent	123	3.37	.88	2	5.80	10.12*	2>1
		G2 Average	82	3.79	.75	419	.573		
		G3 Poor	217	3.70	.68	421			3>1

*Note: *. The significance of Mean difference was.05. Ns represents no significant difference.*

It is shown from Table 4.25 that there is a significant difference ($p < .05$)

in school reputation and resources for teachers' evaluation on the effective PLC, and by using the LSD method, it is found that the evaluation of the teachers from schools with excellent reputation and dominant resources is significantly lower than that from schools with average and poor resources. However, there is no significant difference in the latter two schools. ANOVA analysis and LSD comparison were conducted in each aspect.

There is no significant difference in the evaluation for teachers from schools with different school resources in the " supportive and shared leadership". In the other variables of effective PLC such as "collective creativity", "shared values and vision" and "shared personal practice" all remain the same as the overall test results. The evaluation of teachers from excellent schools with dominant resources is significantly lower than that of teachers from schools with average and poor resources. However, there is no significant difference between the latter two schools.

4.2.1.7 School size

In this part, ANOVA analysis is used to investigate the differences in the evaluation of effective PLC for teachers from schools with different sizes. The results are shown in Table 4.26.

Table 4.26 ANOVA of PLC levels of teachers from schools with different sizes

	Variables	School size	N	M	SD	df	MS	F	Post Hoc
1	Supportive and shared leadership	G1 large	230	3.65	.86	2	23.1	26.94*	1>2
		G2 medium	159	2.99	.98	419	.858		
		G3 small	33	2.92	1.10	421			1>3
2	Collective creativity	G1 large	230	3.94	.65	2	8.85	16.09*	1>2
		G2 medium	159	3.51	.83	419	.550		
		G3 small	33	3.63	.88	421			1>3
3	Shared values and vision	G1 large	230	3.67	.72	2	10.9	15.45*	1>2
		G2 medium	159	3.21	.93	419	.703		
		G3 small	33	3.24	1.12	421			1>3
4	Shared personal practice	G1 large	230	4.10	.59	2	13.8	23.27*	1>2
		G2 medium	159	3.64	.82	419	.592		
		G3 small	33	3.40	1.40	421			1>3
	Overall	G1 large	230	3.85	.60	2	13.2	24.49*	1>2
		G2 medium	159	3.36	.80	419	.538		
		G3 small	33	3.30	1.11	421			1>3

Note: *The significant level of mean difference is.05. Ns represents no significant difference. Including large schools (above 36 teaching classes), medium size schools (18-36 teaching classes), and small schools (less than 18 teaching classes).

It is shown from Table 4.26 that there is a significant difference ($p < .05$) in the evaluation of effective PLCs of teachers from schools with different sizes, and using the LSD method, it is found that the evaluation of teachers from large schools is significantly higher than that of teachers from medium and small schools. However, there is no significant difference in the evaluation of teachers in the latter two kinds of schools. ANOVA analysis and LSD comparison were conducted in each aspect.

The evaluation of teachers from schools in different sizes remains the same as the overall inspection results in " supportive and shared leadership", "collective

creativity", "shared values and vision" and "shared personal practice". The evaluation of teachers from large schools is significantly higher than that from medium and small schools, and there is no significant difference between the latter two schools.

4.2.1.8 Summary of ANOVA of PLC Participation

By means of independent sample t-test and ANOVA analysis, this study is to investigate the differences in the evaluation of effective PLC of English teachers with different backgrounds. The different influence factors of English teachers' effective PLC are shown in Table 4.27.

Table 4.27 Comprehensive summary of influencing factors of PLC

Variables		Supportive and shared leadership	Collective creativity	Shared values and vision	Shared personal practice	Mean	Overall
1. Age	G1 21-25	1>2	2>4	2>4	2>1	3.94	1>4
	G2 26-30	2>3	3>4	3>4	2>3	3.97	2>3
	G3 31-40	3>4	5>4		3>4	3.67	3>4
	G4 41-50	4>5			5>4	3.36	
	G5 51-60					3.66	
2. Teaching experience	G1 1-5	1>2	1>3	1>2	1>2	4.19	1>2
	G2 6-10	2>3	1>4	2>3	1>3	3.85	2>3
	G3 10-15	3>4	2>3	3>4	1>4	3.60	3>4
	G4 15 up		2>4			3.42	
3. Academic degree	G1 Master	1>3	1>3	2>1	1>3	3.54	1>3
	G2 Bachelor	2>3	2>3	2>3	2>3	3.67	2>3
	G3 Junior college			1>3		1.90	
4. Whether graduate from normal university	Yes	2>1	2>1	Ns	Ns	3.58	2>1
	No					3.89	

Table 4.27 (continued)

Variables		Supportive and shared leadership	Collective creativity	Shared values and vision	Shared personal practice	Mean	Overall
5. Major	G1 English	1>3	1>3	Ns	1>3	3.65	1>3
	G2 pedagogies	2>3	2>3		2>3	3.57	2>3
	G3 Others					2.84	
6. English certificate	G1 TEM 8	1>2	1>2	1>2	1>2	3.78	1>2
	G2 TEM4	1>3	1>3	1>3	1>3	3.53	1>3
	G3 None					3.46	
7. School reputation and resources	G1 Excellent	Ns	2>1	2>1	2>1	3.37	2>1
	G2 Average		3>1	3>1	3>1	3.79	3>1
	G3 Poor					3.70	
8. School size	G1 Large	1>2	1>2	1>2	1>2	3.85	1>2
	G2 Medium	1>3	1>3	1>3	1>3	3.36	1>3
	G3 Small					3.30	

4.2.2 Comparison of TPD by Teacher Background

4.2.2.1 Teaching Experience

In this part, ANOVA analysis is used to investigate the factors that influence learning outcomes in PLC. The results are shown in Table 4.28.

Table 4.28 ANOVA of learning outcomes by teaching experience

Variables	Teaching experience	N	M	SD	df	MS	F	Post Hoc
Overall	G1 1-5	52	4.19	.911	3	9.014	16.77*	1>2
	G2 6-10	53	3.85	.541	418	.537		2>3
	G3 10-15	125	3.60	.554	421			3>4
	G4 15 up	192	3.42	.822				

Note: *The significant level of mean difference is.05. Ns represents no significant difference.

4.2.3 Analysis of TPD in the PLC participation

In the research, we use the adopted questionnaire “English Teacher Professional Learning Community and Their Professional Development" as the research tool. The questionnaire is designed by the five-point Likert, in which the respondent chooses the "very consistent" to get 5 points, the "consistent" 4 points, the "partly consistent" 3 points, and the “inconsistent” 2 points and the "very inconsistent" 1-point. It is used to indicate the score of English teachers’ TPD in Chinese high schools. The average value is 3 points. The higher the score is, the higher English teachers' recognition of PLC is and the more positive its influence is, and vice versa. On the basis of subject knowledge, teaching method, teaching skills, professional recognition and professional identity, we have investigated teachers’ learning effectiveness of in the effective PLC.

4.2.3.1 ANOVA of TPD by PLC Participation Level

Table 4.29 ANOVA of learning outcomes by level of PLC participation

Variables	Participation level	N	M	SD	df	MS	F	Post Hoc
	G1 low (0-2)	92	3.25	.848	2	8.7	15.5**	
Overall	G2 medium (3-5)	296	3.74	.041	419	.559		2>3
	G3 high (6-7)	34	3.57	.142	421			3>1

Note: **The significant level of mean difference is .05. Ns represents no significant difference.

ANOVA analysis and LSD comparison were conducted in each aspect. It is shown from Table 4.28 and Table 4.29 that there are significant differences in the evaluation of learning outcomes with teachers' teaching experience and the participation level of PLC, and using the LSD method, we can see clearly how theses factors influence the learning outcomes in PLC.

4.2.3.2 Relationship between PLC and TPD

Based on the results of the above questionnaire analysis, and according to the research purposes and research questions as well as the relevant literatures, a comprehensive discussion has been made and a deep analysis of the influencing factors to TPD in the effective PLCs is carried out in this section.

According to the analysis of the first section of this chapter, the general situation of the development of effective PLC in Changchun is analyzed and summarized as shown in Table 4.30.

The questionnaire for English teachers' PLC and TPD survey is based on the Five-Point Likert, with a median score of 3 points in each option. The answers are as follows: very consistent (5 points); consistent (4 points); partly consistent (3 points); inconsistent (2 points); quite inconsistent (1 point). The findings of the discussion on TPD of senior high school English teachers, the effective PLCs are as follows:

Table 4.30 Levels of PLC and TPD for senior high school English teachers

Variables	Max	Min	Mode	MED	Mean	SD
1. PLC level	**4.95**	**1.17**	**3.98**	**3**	**3.62**	**.77**
1.1 Supportive and shared leadership	5.00	1.00	4.00	3	3.35	.98
1.2 Collective creativity	5.00	1.67	4.00	3	3.75	.77
1.3 Shared values and vision	5.00	1.00	3.67	3	3.47	.87
1.4 Shared personal practice	5.00	1.00	4.00	3	3.87	.81
2. TPD level	**5.00**	**1.00**	**4.00**	**3**	**3.85**	**.91**

According to Table 4.30, the average score in the overall aspect of the effective PLC is 3.62, which lies in the "consistent" and "partly consistent". The overall score is higher than the middle value, indicating the overall recognition of the senior high school English teachers to the effective PLC. The scores are up and down between "shared personal practice", "collective creativity", and “shared values and vision” and “supportive and shared leadership”. In this study, "shared personal practice" enjoys the highest score. And we believe that after a long period of development, the PLC in Chinese high schools can form a fixed professional development activity. The frequency and degree of teachers' cooperation have become part of the daily teaching and learning activity. Therefore, teachers have a higher evaluation on this aspect. The "supportive and shared leadership" gets low score, so

we speculate that the overall evaluation of the variable is influenced by the background factors of Chinese society itself. In the Chinese centralized and democratic social management system, there are differences in the democratic and cooperative management and "supportive and shared leadership" between the PLC with Chinese characteristics developing from the teaching experience of the Soviet Union and that developing from bottom to top from the west.

The whole average score of TPD is 3.85, which means that high school English teachers have a higher recognition for TPD in the PLC. Most of the teachers believed that learning the experience of their own PLC can positively influence their "professional identity". The second is in the level of "teaching skills". The option with the lowest recognition is "professional identity". We speculate that the result is related to the number of older teachers who account for 75% and possess 10 years' teaching experiences in the sample. After a long career development, the teachers have produced corresponding job burnout and a lower sense of professional identity for teachers' career.

4.2.3.3 Regression analysis of TPD

In this section, we first test the "hypothesis 3: English teachers' recognition to the characteristics of PLC has a significant impact on TPD" by crosstab Pearson

extreme correlation analysis. In the Pearson extreme correlation analysis, the closer the correlation coefficient γ of the effective PLC and TPD approaches to 1, the stronger the relationship between the two is; the closer to 0, the weaker the correlation intensity is, which is used to verify the research hypothesis 3. In this study, the relation of its variables is first determined by using the coefficient γ according to general situation of variables “supportive and shared leadership", "collective creativity", "shared values and vision" and "shared personal practice" and TPD in the effective PLC. The correlation coefficient is shown in Table 4.31.

Table 4.31 Correlation analysis between effective PLC and TPD

Variables		**Supportive and shared leadership**	**Collective creativity**	**Shared values and vision**	**Shared personal practice**
TPD	Pearson	.666**	.785**	.730**	.826**
	Significance	.000	.000	.000	.000

Note: ** the significant difference of mean difference was.01, indicating significant correlation.

All the variables of effective PLC have a significant impact on TPD. "Shared personal practice" has the most positive impact on TPD. The coefficient γ is 0.826 (P = 0.000), reaching a significant level. That is, the depth and breadth of teachers’ cooperation in the discussion, dialogue, observation and evaluation regarding students and teachers’ learning and working puts a significant impact on the TPD.

Collective creativity has a positive impact on TPD. The coefficient γ is

0.785 (P = 0.000), reaching a significant level. That is, the cooperative culture and practice of learning and working together in the community will help TPD.

“Shared values and vision” has a positive impact on TPD. The coefficient γ is 0.730 (P = 0.000), reaching a significant level. That is, the higher the consensus of learning and benefits that all teachers provide students in value and specifications, the greater the promotion to TPD is.

The influence of "Supportive and shared leadership" on TPD is the lowest one in the four variables, but there is still a positive correlation, the coefficient of which is 0.666 (P value is 0.000), reaching a significant level. That is to say, the more the “Supportive and shared leadership” is fair, equal and democratic in schools and PLCs is, the more effective TPD will be.

From the Pearson extreme correlation analysis above, we can see that the effective PLC is positively related to TPD. Therefore, we use multiple regression analysis to further investigate the predictability of TPLC on TPD.

Multiple regression analysis aims at using two quantitative variables to predict another quantitative variable. In the multiple regression analysis, the commonly used effect quantity is R^2, which represents the ratio that the predictor variable explains calibration variables. According to the experience rule of Cohen

(1988), the small, medium and large effects of multiple regression analysis R^2 are 0.02, 0.13 and 0.26 respectively.

In the study, four variables like "Supportive and shared leadership", "Collective creativity", "Shared values and vision" and "Shared personal practice" of the effective PLC are used to predict TPD and R^2 is applied to determine their predictability. The correlation coefficient is as shown in Table 4.32.

The regression analysis of the effective PLC for TPD shows that the overall effect is significant F(5, 416)=213.253, p< 0.001, R^2= 0.719. And its explanation variance has reached a significant level of 71.9%. Therefore, the learning experience of English teachers in the effective PLC has a significant impact on TPD.

Table 4.32 Regression analysis of PLC on TPD

Input prediction variable order	Multivariate correlation coefficient	The cumulative interpretation of the determinant coefficient R^2	The increasing interpretation of determining coefficient R^2	F
Effective PLC	.848	.719	.716	213.253***

Note: ***p< 0.001 means that the significant level of mean difference was 0. 001.

In the explanation variance of individual variables, as shown in Table 4.33, the standardized regression coefficients of four independent variables, including supportive and shared leadership, collective creativity, shared values and vision and shared personal practice are implying positive impact on TPD.

In regression analysis, the regression coefficients of supportive and shared leadership, collective creativity and shared personal practice have reached a significant level (p< .05). The related analysis before shows that collective creativity and shared personal practice is highly correlated with TPD and the correlation coefficients reach .785 and .826. The correlation coefficient of the supportive and shared leadership is slightly lower than .666. It can be seen that supportive and shared leadership, collective creativity and shared personal practice have a significant impact on TPD.

Table 4.33 Multiple regression analysis of the predictive TPD in PLC

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig. p-value**
	B	**Std. Error**	**Beta**		
1 (Constant)	.072	.121		.596	.552
Supportive and shared leadership	.115	.041	.125	2.785	.006**
Collective creativity	.255	.073	.216	3.494	.001**
Shared values and vision	.090	.056	.086	1.594	.112
Shared personal practice	.586	.057	.524	10.312	.000**

Model Summary					
Model	R	R^2	Adjusted R^2	F	**Change**
1	.848	.719	.716	213.253***	

Note: **p< .05 means that the significant level of mean difference was .05. ***p< 0.001 means that the significant level of mean difference was 0. 001.

The results show that the coefficient of the effective PLC in four variables like "Supportive and shared leadership", "collective creativity", "shared values and

vision" and "shared personal practice" are 0.826, 0.785, 0.730 and 0.666 respectively, all of which have reached significant positive correlation. Second, the hypothesis 3 "Different experiences have significant differences in the evaluation of teachers' professional learning communities" is supported. Through multiple regression analysis, it is found in Table 4.30 and 4.31 that "shared personal practice", "collective creativity" and "supportive and shared leadership" have a significant impact on TPD.

Table 4.34 Hierarchical regression analysis (enter)

	Variables	Set 1			Set 2			Set 3		
		B	**Beta**	**t**	**B**	**Beta**	**t**	**B**	**Beta**	**t**
1	School size	-.423	-.298	-.6.47**	-.367	-.258	-5.58**	-.002	-.001	-.047
2	School reputation and resources	.322	.310	6.73**	.301	.289	6.36**	.137	.132	4.84**
3	Teaching experience				-.163	-.186	-4.10**	-.010	-.012	-.427
4	Supportive and shared leadership							.134	.145	3.42**
5	Collective creativity							.221	.187	3.31**
6	Shared values and vision							.025	.024	.455
7	Shared personal practice							.593	.529	10.50**
	R^2	.148			.181			.735		
	R^2 changed	.148			.033			.554		

Note: **p< .01 means that the significant level of mean difference was 0.01.

Hierarchical regression analysis with enter method is shown in Table 4.34 to compare three models. We take teacher's learning outcomes as the dependent

variable and put the independent variables by three steps. In Set 1 the independent variables are school context factors (school size and school reputation and resources), and we add teacher background factor (teaching experience) as another independent variables in Set 2, then we add the independent variables “supportive and shared leadership”, “collective creativity”, “shared values and vision” and “shared personal practice” in Set 3.

As shown in Table 4.34 the R square changed values are 0.148, 0.033, and 0.554 respectively. On the various levels of tests, the scores of “school reputation and resources” (t=4.84) and “Shared personal practice” (t=10.50) are significantly different with the teacher’s learning outcomes. Moreover, the results show that school context (school size and school reputation and resources) and teacher background (teaching experience) are factors influencing English teachers participating in PLC and different levels of PLC participation significantly affects teacher’s learning outcomes.

4.2.4 Summary of the research results

School reputation and resource: the results of the study show that there are significant differences in the evaluation of the effective TPLC from different school reputation and resources. Among them, the evaluation of the effective PLC of

teachers from schools with excellent or poor reputation and resources is significantly higher than that of teachers from schools with average reputation and resources. But there is no significant difference in the "supportive and shared leadership" between these different schools. Therefore, the hypothesis 1-1: "Different school reputation and resources have significant differences in the evaluation of teachers' professional learning communities." is partly supported in the variables "collective creativity" and "shared values and vision" and "shared personal practice".

School size: the results of the study show that the evaluation of teachers in large schools for effective TPLC is significantly higher than that of medium and small schools. There was no significant difference between the latter two. Therefore, the hypothesis 1-2: "Different school sizes have significant differences in the evaluation of teachers' professional learning communities." is supported.

The age: teachers of different ages have significant differences in the overall evaluation of effective PLC. Generally speaking, young teachers under 30 years old have higher evaluation than teachers who are aged 31 or above. Among them, 41-50 year-old teachers in all variables of evaluation are lower than teachers at other ages. With the growth of age, the "supportive and shared leadership" has been declining. Therefore, the hypothesis 2-1: "Different ages have significant differences

in the evaluation of teachers' PLCs" obtains supports.

Teaching experience: with the increasing of teachers' teaching experiences, the overall evaluation of the effective PLC is decreasing. The evaluation of new teachers with 1-5 years' teaching experiences is significantly higher than that of 10 years up. Therefore, the hypothesis 2-2: "Different teaching experiences have significant differences in the evaluation of teachers' PLCs" gets support.

Academic degree: the research results show that, teachers with different academic degrees have achieved significant differences in the evaluation of the PLC. Among them, teachers with master and bachelor degree in the evaluation of PLC are significantly higher than those with junior college degree. However, there is no significant difference between master and bachelor's degree. Therefore, the hypothesis 2-3: "Different academic degrees have significant differences in the evaluation of teachers' PLCs" gets supports.

The graduation school: the study show that, in terms of the overall results, whether or not graduating from normal university has a significant impact on the evaluation of the teachers' effective PLC. There is a significant difference in the evaluation of teachers in the "collective creativity" aspect. Therefore, the hypothesis 2-4: "Different graduation schools have significant differences in the evaluation of

teachers' PLCs" is partly supported in "collective creativity".

Major: research results show that major has a significant impact on the evaluation of effective TPLC. Among them, the teachers in English and pedagogy majors have not shown the difference with other major teachers in the "shared values and vision". Therefore, the hypothesis 2-5: "Different major has significant differences in the evaluation of teachers' PLCs" is partly supported in " supportive and shared leadership", "collective creativity" and "shared personal practice".

The English certificate: research results show that the English certificate has a significant impact on the evaluation of effective TPLC. Among them, teachers with TEM 8 and TEM 4 were significantly higher than those without qualifications. However, there is no significant difference between teachers with these two certificates.

Therefore, the hypothesis 2-6: "Different English certificates have significant differences in the evaluation of teachers' professional learning communities" gets supports.

In this study, a total of 6 hypotheses (hypothesis 1-2, hypothesis 2-1, hypothesis 2-2, hypothesis 2-3, hypothesis 2-6, hypothetical 3) have got significant support and 3 hypotheses (hypothesis 1-1, hypothesis 2-4, hypothesis 2-5) are

partially supported. The validation results of these hypotheses are integrated as Table 4.35.

Table 4.35 Summary of hypothesis validation

Hypothesis	Content	Validations
1-1	Different school reputation and resources have significant differences in the evaluation of teachers' professional learning communities.	Partly verified
1-2	Different school size has significant differences in the evaluation of teachers' professional learning communities.	Get support
2-1	Different ages have significant differences in the evaluation of teachers' professional learning communities.	Get support
2-2	Different teaching experiences have significant differences in the evaluation of teachers' professional learning communities.	Get support
2-3	Different academic degrees have significant differences in the evaluation of teachers' professional learning communities.	Get support
2-4	Different graduation schools have significant differences in the evaluation of teachers' professional learning communities.	Partly verified
2-5	Different majors have significant differences in the evaluation of teachers' professional learning communities.	Partly verified
2-6	Different English certificates have significant differences in the evaluation of teachers' professional learning communities.	Get support
3	Different experiences have significant differences in the evaluation of teachers' professional learning communities.	Get support

After summarizing TPD and different effective PLCs, we have found that: Teachers aged 41-50 are less likely to evaluate and experience professional development, but their participation in PLC is significantly higher than that of teachers of other ages. According to the analysis of teachers' with more than 15 years' teaching experiences, that is, teachers at the age of 41-50 have a high degree of participation in the PLC, but their TPD evaluation is lower than that of teachers at

other ages. The TPD and PLC experiences of 26-40 years old teachers with 6-10 years' teaching are significantly higher than other age groups of teachers.

Researchers speculate that this phenomenon is related to the development stage of teachers' career and the bottleneck period of job burnout. According to the Shao Yali's study, it is found that from the standard deviation between the professional commitment of Novice, Proficient and Expert and the level of job burnout, the tendency of the "U" distribution is generally presented. That is, the degree of discretization of the novice teachers is small, and when they grow to be proficient, it increases; and the degree of centrifugation gradually decreases (Shao Yali, 2003) when they come to the expert teacher. This shows that in their growth process, there is a period of transition and differentiation, and this period is mainly concentrated in the proficient stage. In this study, teachers with more than 10 years' teaching experiences have been in the proficient, and their job burnout has reached the climax of career development. Although their participation in PLC is very high, the evaluation and willingness of their professional development is lower than that of other group.

At the academic level, only 4 teachers graduated from tertiary institutions in this survey. 76.3% of the teachers have bachelor's degree, and 22.7% have master's

degree. Data analysis shows that the professional development of junior college teachers and the participation degree of effective PLC are significantly lower than those of other academic qualifications. The participation in different new PLCs is higher than that of traditional PLC. While teachers with master's degree prefer to participate in the TPD activities of the Teacher Studio. Therefore, in the analysis and discussion of the follow-up in-depth interviews, researchers ignore the impact of academic factors on the TPD and the effective PLC.

Major: the TPD evaluation of teachers majoring in English and pedagogy are significantly higher than those of other majors. However, there is no significant difference between teachers majoring in English and pedagogy. Graduates of English majors prefer the activities of teaching and research group. The participation of graduate students in pedagogy is higher. Among the survey samples, 88.2% of teachers are in English teachers and 9.5% in pedagogy. Therefore, in subsequent interviews, researchers focus on the TPD strategies of English majors.

Professional certificate: in the survey sample, 41.7% of teachers have a professional certificate TEM-8, 37.7% of the teachers have TEM-4, and 20.6% of the teachers have no English qualification certificate. In the age distribution of teachers, 32.9% of teachers are over 41 years old. Researchers speculate that 20.6% of the

teachers who have no English certificates mainly have been over 41 years old. In the 80s of last century, due to the shortage of teachers during the Great Proletarian Cultural Revolution and the imperfect access mechanism of teachers, some English teachers did not take the corresponding English certificates and then worked. But this part of the group teachers have now entered the middle age, so their social role and family role pressure is greater, and career development before the age of 40 has not been promoted accordingly; the teacher in this stage of career development is in the down period of stagnation. Therefore, in the follow-up interviews, we increase samples that those have more than 20 years' teaching experiences and no English certificates such as C2, D3 and I2.

School reputation and resource: different school reputation and resources present significant differences in TPD evaluation. Among them, the schools with poor and average reputation and resources were significantly higher than those with excellent reputation and resources. There was no significant difference between these two kinds of schools. Teachers in excellent schools prefer participating in teaching and research group and preparation group. Teachers from poor schools prefer participating in grade group and subjected-based QQ/Wechat group. The findings are inconsistent with the researchers' hypothesis. After the analysis, researchers speculate

that the excellent schools are more concerned with the students' achievements and output, and the pressure of the higher school enrollment rate in the college entrance examination had affected their TPD.

School size: schools with different size present significant differences in TPD evaluation. Among them, the TPD of teachers in large schools is significantly higher than that of medium & small schools. There is no significant difference between medium and small sized schools. Teachers in large-size schools have higher participation in regional learning community, such as QQ/Wechat group. Teachers in medium-size schools have a higher participation rate in the teaching and research group and the grade group.

4.3 Analysis of Opportunities for TPD in PLCs

Based on the overall evaluation of the effective PLC, this study investigates the participation of teachers in the effective PLCs in six forms and three categories.

4.3.1 The development of effective PLC in Changchun

This survey covers three types and six different forms of PLCs: traditional: teaching research group, collective lesson preparation group and grade group; new: teacher studio, regional PLC; network virtual: QQ / Wechat group.

The first three are the grass-roots organizations of teaching and research set

up according to Work Regulations of the Middle School Teaching Research Group (Draft) by the Ministry of education in 1957. Under the guidance of this regulation, teaching and research groups are gradually established in primary and secondary schools. In the same grade, collective lesson preparation group can carry out teaching research activities around the teaching and research group (Shan, 2014). This is a PLC widely existing in China's primary and secondary schools, with three forms of the traditional PLC, established by taking the "teaching group" of the Soviet Union as prototype.

In recent years, with educational reform and the change of times, two kinds of new PLCs have emerged as teacher studio and regional PLC. The Outline of National Medium-Long term Educational Reform and Development Plan (2010-2020 years) points out: "teachers are the foundation of education plans, and without good teachers, there is no good education." "Rigorously enforcing teacher qualifications, improving the quality of teachers, and striving to create high quality professional teachers with noble ethics, exquisite business, reasonable structure and full of vitality." Over the past few years, trials have been made in various areas to cultivate high-quality teachers. The Teacher Studio is one of the patterns of localized exploration, which combines the traditional collective lesson preparation and the

growth mode of the teacher with apprentice, complies with the social characteristics of knowledge and learning, and realizes the transformation of TPD from "subjectivity" to "intersubjectivity", and fully exerts accumulated resource advantage by famous regional teachers (Han & Yu, 2014). The Teacher Studio develops a corresponding TPD or teaching and research activities under the guidance of a special teacher. The regional PLC is a learning organization based on the division of administrative units, in order to balance the distribution of school and teacher resources in the region, and combine the daily professional practice of teachers with TPD. The regional PLC has integrated the resources of many schools, and has gathered all teachers in a certain administrative area.

QQ group and Wechat group are networking virtual PLC after the popularity of Internet technology and computers. As the two largest instant messaging tools in China, they have been widely used in school management.

4.3.2 English teachers' TPD opportunities in Changchun

4.3.2.1 Policy Support in TPD

In the National Plan for the Development of Medium-Long Term Education (2010-2020), "strengthening the building of teachers" has been officially listed as a top priority in China's education for the last 10 years. "It is necessary to

build high quality teachers. Planning for education is based on teachers. Good teachers develop good education. We should safeguard the status of teachers, maintain their rights and interests and improve their remuneration, thus making teacher a respected profession. Efforts should also be made to cultivate quality and professional teaching staff with noble morality, good business, reasonable structure and full vitality by making teacher qualifications strict and promoting their quality. Educational departments at all levels have set up several special projects in recent years. In 2017, the Ministry of Education promulgated the Opinion of the Ministry of Education on Strengthening the Training of Teachers in Primary and Secondary Schools, and the guidance of the Ministry of education on deepening the reform of the training mode of primary and secondary school teachers to improve the quality of training. The state has strongly supported TPD in terms of policies and funds.

4.3.2.2 The learning opportunities provided by the PLC

In order to meet the needs of TPD, Changchun Education Bureau has set up a special project for it. The provincial government of Changchun has increased the financial support for teacher education so as to ensure funding for TPD. According to the implementation opinions of the people's Government of Jilin on the balanced development of compulsory education, teachers' training funds are included in the

provincial budget. The new financial education funds should be regarded as one of the key points of investment, and the primary and secondary schools (kindergarten) should organize the teacher training according to 5% of the annual total budget. We should establish a teacher training management system, strengthen dynamic monitoring of provincial and local training, and improve the efficiency of teacher training funds.

The management of "University District" is carried out in the light of local conditions. We will support the implementation of the "University District" management, encourage the establishment of school alliances, and carry out inter-school cooperation through joint planning and guidance. The sharing of facilities, teachers, curriculum resources, information resources and management resources should be realized in the "University District", thus to give play to the radiation function of quality schools and promote the development of poor schools

4.3.2.3 The learning opportunities provided by the traditional PLC

Teachers in China engage regularly in a wide range of professional development activities, including specific short-term training activities, but also the range of “teaching and research activities” that constitute the core of professional learning communities in Chinese schools. These activities include collective lesson

planning; peer observation and evaluation and critique; observation of demonstration or model lessons, including the watching of videos of model lessons; and the production and consumption of research about teaching and learning, including by publishing articles in school, township, county, district, provincial, and national newsletters, newspapers, and journals.

Heterogeneous class

In heterogeneity class, teachers in an English group choose a subject, which is prepared by two or more than two teachers independently. According to the designed plan, the lesson begins in two classes with the same students' capability, and a comparative study is carried out after class.

> "*I competed with a proficient teacher in a heterogeneous class activity.*" (G3-3-1) " *When I went to the old teacher's classroom, I immediately felt the impact."* (G3-3-4) *"To this contrast, I admitted with regret that I am not as good; maybe it's just not skillful.*" (G3-3-9)

G3 gave a detailed description of the heterogeneity class activity she had participated in. She found her deficiency in teaching through competing with another

teacher of the group in this activity. This kind of activities provides teachers in the PLC learning opportunities.

Collective lesson preparation

Lesson preparation process: first, the same class enjoys different structures. In the same lesson preparation group, two teachers are selected to make a lesson plan for a certain subject in the same unit, and each of them makes PPT and lesson plans. The second is to prepare lessons collectively. All the teachers in the lesson preparation group are gathered together, and two teachers take turns showing their lesson plans. On this basis, we discuss the merits and demerits of the lesson plans together, and put forward opinions to form the final lesson plan. Third, the lessons are taught on the scene. All the preparation teachers participate in the on-site teaching of two teachers. The fourth is collective reflection. After the end of the course, a group meeting is held in time to discuss the merits and demerits of the lesson plan and practice, and all put forward suggestions for improvement.

One lesson and Three Corrections

That is, the same class is taught three times in different classes. There are two forms of teaching: the same teacher teaches three lessons, or three different teachers teach one lesson. Taking the grade group as the unit, a text as the teaching

content, the grade group selects the teacher and class. The grade group carries out the first two lectures. After each class, the group leader organizes to discuss and modify the details of the teaching plan, the teaching content, and the teaching form and so on. During the third lecture, the head of the teaching and research group organizes all the teachers in the same discipline to observe the class. In the end, all teachers make an evaluation on the last class.

> "*Like this continuous activity, communication and feedback between teachers will be more effective. We often reflect on where we teach well and where we lack. For the three consecutive activities, the first opinion can be constantly improved in second and third times. We can all see the effect of teaching, so communication is more effective*." (B1-13)

B1, as the principal person in charge of the school English group, has further explained the activity of "One lesson and Three Corrections". There is a good interaction between the individual and the collective. On the one hand, after three public lectures, the teachers can constantly reflect on the problems in the classroom and improvement in knowledge understanding, class management and teaching skills.

In addition, other teachers can jump out of their own single classroom to refer other teachers' lecturers, which can promote other teachers' self-judgment and reflection.

But in such activities, it is easy to form small groups in which some teachers with good relationship are easy to hold together in activities, resulting in a lower willingness to share knowledge. On the one hand, this phenomenon cuts off the open communication mechanism among teachers, and has a negative impact on the overall communication and collaboration. On the other hand, small groups lack of external information and learning resources, which limits the space and possibility for teachers to improve.

The policy and administrative authority restrict the PLC in the school, so the teachers' participation is relatively high.

4.3.2.4 The learning opportunities provided by the new PLC

Expert lecture training

In order to promote the development of the weak schools, the Changchun Municipal Education Bureau and the Changchun Normal University jointly run the training of principals and key teachers in primary and secondary schools, led by education experts, which are specially designated for principals and the backbone teachers in the relatively weak schools.

Table 4.36 Expert lecture training list

Experts	Units	Research topic
Z	Director of education training center, Ministry of education, Dean of School of Education Management	The quality assurance of developing school education
Y	East China Normal University	Discovering tacit knowledge and promoting principal's professional development
C	Northeast Normal University	Information technology and curriculum integration of backbone teachers
X	Jilin University	Teachers' professional growth under the background of Internet
J	Changchun Normal University	International Comparison of the development of teachers' professional standards

The training implements the leading expert system. The responsibility of expert group is: first, in accordance with the principle of expert responsibility, the leading experts undertake the overall responsibility of the class. Second, formulating a plan for a class, determining the contents of training and defining the enrollment number and objects. Third, organizing the implementation of training plan and making the implementation of teaching progress, teaching materials and related materials. Fourth, it is responsible for the issuance of certificates. Fifth, in accordance with the provisions of financial management, full use of the special training funds appropriated by the Education Bureau and the fees paid by the college is made.

"*Specialist training led by experts can provide access to cutting-edge*

knowledge for teachers in the weak school, and enhance our professionalism, ability and level. I can provide enlightening thinking for my school management, school building and career development in the future."(D3-13)

As a member of the training school, D3 summed up the experience of expert lecture training. This kind of new PLC provides learning opportunities for the members. It is more helpful for teachers from weak schools.

The Teacher Studio

The main activities in Teacher Studio include expert lectures, observation learning, lectures, and class evaluation, reading introspection, and theme forums. The activities of different sectors provide different professional development space for teachers.

As a special English teacher in Changchun, A1, with the encouragement and call of the Changchun Education Bureau, established her first English teacher's studio in Changchun. She thinks:

"*It gives full play to the resources advantage of the famous teachers, helps teachers understand the current dynamic of education and teaching reform, grasps the hot and difficult problems of the*

educational reform and recognizes the trend of education development, thus helping to update its own educational concept and the idea." (A1-14-2)

In addition, in order to help English teachers truly establish cross-cultural communication experience, thus feeling the connection between language communicative competence and English teaching, the Teacher Studio also holds "Sino foreign friends exchange activities".

"*If an English teacher does not have the experience of communicating with foreigners, how can he imagine himself to do cross-cultural communication?*" (A1-14-5)

With the help of universities in the city, the studio often organizes regular exchanges of teachers in the studio and foreign students every semester. This activity has been well received by English teachers.

U-G-S PD opportunities

U-G-S is a new mode of cooperative teacher education established by Northeast Normal University, based on the public free education policy for the state normal students and the idea of running a rural basic education service. The mode of U (University) -G (local government) -S (school) explores the mechanism of

cooperation and innovation in the cultivation of normal students, the training of teachers in the rural primary and secondary schools, the research of basic education, the PD of educators and the construction of basic information platform, and has achieved good educational and social benefits.

The key school E in the city is one of the cooperative colleges of this model. In recent years, under the guidance of the U-G-S project group, a number of cooperative projects on Teacher Education and the reform within the school are being carried out.

> "*Experts can fist comment on the contents and methods of my teaching, and then explain to me in combination with theory.*" (E2-3-4) "*The foreign teacher introduces the background knowledge of culture.*" (E2-3-5) "*These two combinations are simple and easy to understand, often enlightening us a lot.*" (E2-3-6)

E2, as a proficient teacher with 16 years' teaching age, has given positive feedback to the U-G-S mode reform of the school.

4.3.2.5 The learning opportunities provided by the virtual PLC

Over recent years, Changchun, Jilin Province has made great efforts to promote education informatization and created new learning opportunities for the

virtual PLC.

Vigorously promoting education informatization. An effective mechanism has been constructed to enlarge the coverage of quality education resources by means of informatization, and gradually narrow the gap between regional, urban and rural areas. More attention is paid to speeding up the construction of provincial, municipal and county leveled education information public service platform, and promoting the interconnection of educational administration departments, research institutes with school information networks, gradually realizing the "broadband Networks Pass in Schools", "High-quality Resources Share in Classes" and "network learning space open for all and promoting teaching, research and teacher training, as well as educational management and safety monitoring informatization of school buses. It is important to exert the service function of educational TV station and carry out the teacher's online project, and deepen the reform of teachers ' training and explore the new model of integrated training of network and school-based study. To promote the deep integration of information technology and educational teaching, so that teachers and students in rural and remote areas can enjoy quality education resources.

Using the advantages of the Internet, the Education Bureau has made on-off line combination of the traditional PLC and virtual network, which helps

achieve the long-distance training of the full range of primary and secondary education in the context of "Internet +", and implement the staff training system with an average of not less than 90 hours a year for primary and secondary school teachers. Moreover, the construction of training courses supermarkets, innovative training models, training forms reform, improvement of training evaluation methods are conductive to actively promoting the trainings by classification, layers and posts of the city's primary and secondary school teachers and comprehensively improving their PD by creating a platform for teachers to study online and carrying out teaching follow-up guidance and research activities over the province.

> "*Our school is now working with a university, and we have developed a set of online learning and communication platform from the 'English learning club' abroad.*" (E1-5-1) "*I think the learning function of this platform will be more reliable than that of QQ group and Wechat group.*" (E1-5-6)

Constructing courses supermarket. To cultivate students ' core quality as the starting point, taking Curriculum Standards for Teacher Education as the guide and the "professional concept, knowledge and competence" put forward in Professional Standard of Primary and Secondary School Teachers as the main

contents, gradual efforts are made to explore the hatching mode and cultivating mechanism of exemplary excellent course of synergy and innovation to develop a series of quality courses with pertinence, leading and cutting-edge and able to meet the needs of teachers.

"Course supermarket" can be created in the way of mainly ordering the courses from the excellent training team and the specialized or part-time training teacher, with purchasing courses supplemented to refine video lecture courses to increase the proportion of practical courses and enrich the courses such as teaching cases, teaching courseware, micro-class, the excellent teacher forum, psychology and information technology.

It’s planned to achieve 80% of self-sufficiency rate of the teacher-training program by 2019. To meet the individualized training needs of teachers, teachers' independent course selection system has been with full coverage of study section and discipline and the whole open courses.

Innovating training model. It takes the mixed on-off line training as the main mode, and gradually provides each student with personalized curriculum push, resource sharing, learning plan design, and learning tracking services. Training is provided in the form of CD-ROM or information kits for teachers with older, more

remote areas and online learning difficulties.

4.3.3 Summary

In the research we found that with the support of national policy, Changchun developed the city's own TPD policies and implementation measures. The teachers are given sufficient support in the policy.

This study combines the development of six professional learning communities. Teaching research group and collective lesson preparation group are the two professional learning communities with the most existing forms. Grade group, subject-based QQ/Wechat group rank second.

As two new types of professional learning communities, the Teacher Studio and the Regional PLC are still to be developed. In the participation of the English teachers' PLC, collective lesson preparation group is the highest, reaching 93.8%. The participation of regional PLC is lowest, only 15.6%.

In order to investigate the TPD opportunities in PLCs, we conduct in depth interviews with 27 teachers from 9 selected schools to do qualitative research by using grounded theory. The analysis of the qualitative data for TPD opportunities in PLCs is shown as follows.

Table 4.37 Analysis of qualitative data for TPD opportunities in PLCs

Indexes	Concepts	Categories	Theme
G3-3-1 G3-3-4 G3-3-9	Learning from competing with another teacher in a "heterogeneous class" activity	The learning opportunities provided by the traditional PLC	TPD opportunities in PLCs
B1-13	The grade group organize to discuss teaching details of the lecture several times in a "one lesson and three correction" activity		
D3-13	Learning from the expert lecture training activity	The learning opportunities provided by the new PLC	
A1-14-2 A1-14-5	The activities in teacher studio provide professional development space for teachers.		
E2-3-4 E2-3-5 E2-3-6	University, local government and school cooperate together to organize teacher training activities		
E1-5-1 E1-5-6	Using the advantage of internet implement teacher training activities	The learning opportunities provided by the virtual PLC	

Besides, PLCs in the different resources and different sizes of schools are also investigated. The number of new PLCs in the subject area is much higher than

that of other schools. The development difference of PLCs in different-size schools shows that the PLC in large schools is the most balanced and the number of PLCs is slightly higher than that of other schools.

4.4 Analysis of Barriers for TPD in PLCs

In the examination of the differences and barriers for TPD in different effective PLCs, this study combines the results of questionnaire analysis and in-depth interview to probe into the related problems. First of all, the researcher uses descriptive statistical analysis to summarize the development differences of different professional learning communities in Changchun.

Secondly, combined with results of the interview, this study sums up the differences and barriers of TPD in different effective PLCs.

4.4.1 Analysis of barriers for TPD in the traditional PLC

4.4.1.1 Interpersonal barriers lead to low willingness to share knowledge

Although the "shared personal practice" is highly recognized in the investigation, it has encountered "barriers" in Chinese traditional culture and interpersonal relationship in practical operation. The teacher B2 who owns years of teaching experience, believes that:

"*In the class evaluation, the groups only talk about the merits instead of the shortcomings or publish some insignificant comments for fear of hurting the other side's feelings.*" (B2-11-3) "*We are not willing to make substantive guidance, and actually we all know that most teachers just talk in generalities, careless and perfunctory.*" (B2-11-4)

The low willingness of teachers to share knowledge in the community caused by interpersonal barriers and unsafe environmental factors has been verified in western research. Studies by Dana (2002) and others show that the possibility of being punished by "uncertain environmental factors" may cause teachers to reduce their willingness to share in the community. They are reluctant to share the cases they encounter in their work.

"*You know that feeling when everyone is staring at you under the watchful eyes.*" (B3-11-6) "*After that, more or less, in the group meeting, I would be more reluctant to speak.*" (B3-11-13)

B3 is a new teacher who has just entered the job for 4 years. After graduating from the National Normal University, she was admitted to the school for a short time, but her grades were always in the front rank. Last year, the average score

of the college entrance examination in senior three was ranked first. The school breaks the rule to make her stay in third grade this year. As a young teacher, she would like to share teaching experience with everyone. However, the experience of a college entrance examination review gave her different feelings.

4.4.1.2 High work pressure

In the actual classroom teaching, it is difficult to design a hierarchical and more individual teaching mode due to large number of students, failure to realize small-class teaching and heavy teaching task. In fact, "facing the whole" has put forward higher requirements not only for teaching but also for teachers' own quality and ability. At the same time, it also adds a lot of burden to teachers in the background of the existing class form. Many teachers are often reluctant to "lose sight of one another" because of their hard work and great difficulty. The subject of English is different from other subjects. Foreign language teachers can only stratify the difficulty of language knowledge, while other elements and aspects of language, such as culture, communicative consciousness and emotional attitude, cannot be imparted stratified, which makes the teaching of foreign languages more difficult to teach students in accordance with their aptitude.

In an interview, teacher B1 talked about the special features of English.

"*English teachers are different from those in physics and chemistry and the content of courses cannot change very much.* " (B1-11-1)

But English teachers now should be involved in many aspects in addition to language." (B1-11-2)

High school in China's education system belongs to the noncompulsory stage. The government's overall supervision is weaker than that of the nine-year compulsory education. At the end of the high school, the college entrance examination（Gaokao）, is called the examination of the change of fate by the public, and the students' total achievement in the college entrance examination determines the level of the students' University. In order to improve students' marks, the proportion of students entering elite universities is improved. The percentage of students entering the elite universities is still an important yardstick for the public to measure the quality of teaching. Influenced by this, most of the teachers' efforts are focused on improving students' academic performance rather than their own professional development level. Students' parents are more concerned about their academic performance than their learning process. Therefore, parents, limited by own backgrounds do not pay attention to the possible influence of TPD and the activities of the teachers.

"*My daughter is now in senior high school and I am a school leader, I take two classes of English and I have 16-18 English classes a week (about 40 minutes for each class in Chinese high school).*" (F1-11-7) "*These three things only occupied me every day and I had no time to learn.*" (F1-11-8) "*Besides, when we are in class, how can we really notice so many students' learning process and quality development?* " (F1-11-9)

During the interview, all the teachers from key schools expressed their dilemma in this level. The teacher F1 from the key primary school F represents the voice of most teachers.

4.4.1.3 A lack of democratic and equal supportive and shared leadership

In the analysis of four attributes of the effective PLC, the study found that the score of the "supportive and shared leadership" is lower than that of other attributes, in which the mean and standard deviation of "The leader can take advice from other teachers to make decisions" and "The leader of PLCs is proactive and addresses areas where support is needed" and "Opportunities are provided for teachers to initiate change" are all lower than other options. The above three options obtained

the same results in the previous factor analysis.

Compared with the western countries, China has established the basic organization of teaching and research in accordance with the work regulations of the primary and middle school teaching research group (Draft) in 1957, which serves for the primary and secondary school teachers to engage in collective subject teaching and research. That is to say, the teaching and research group of primary and middle schools in our country is set up as the basic teaching research organization of the school, and synchronizes with the development of the school. This is the specific connotation and organization form of the PLC with Chinese characteristics. In contrast, the practice of Western TPLC stems from the educational reform in twentieth Century. The difference in the birth of the two has led to the existence of a PLC in Chinese schools, but the specific connotation of the " supportive and shared leadership" is different from the essential connotation of the PLC advocated by the western scholars. China's PLC, especially internal grade group in the school, is a typical product of collectivism and bureaucracy in China. The significance of the administrative organization it carries is far greater than that as learning organization.

In the interview, the teacher A3 said to the researcher:

"*I learned some knowledge about education when I was a bachelor,*

and ever listened to the teacher of School of Education about the PLC and I was interested in it at the time. However, from the point of view of work, our school's grade group and lesson preparation group are not the same something that you call the PLC. Our school is a school management organization, rather than an organization to explore teachers' learning." (A3-1)

In the questionnaire survey and later interviews, we find that teachers have slight differences in understanding the learning community itself. The current situation of famous schools is that there are many professional learning organizations, such as grade group, which are more similar to the PLC. But the division of the organization in the school is more inclined to co-ordinate the administrative organization of grade affairs, rather than a pure learning organization with similar original intention of the PLC put forward by the western scholars. The existence of this phenomenon has a negative impact on the learning experience of the PLC.

In terms of its functions, the main functions of the teaching and research group system in Chinese primary and secondary schools are business learning, collectively preparing lessons, listening to classes and evaluating classes, organizing the cooperation between the teachers and Apprenticeship of new and old teachers, and

research on the subject. In fact, China's teaching and research group has made important contributions to TPD in lessons preparation, attending classes and evaluating lessons. Only the activities of teaching and research group pay more attention to how teachers teach, but not enough attention is paid to students' learning and teachers' learning and research. In contrast, western teachers' PLC pays more attention to teachers' learning. Hood believes that PLC is a team of teachers and managers with common values. Through the dynamic and continuous cooperative mechanism, they gather the willingness and action of the members. At the same time, they continue to improve the teaching practice and seek the development of the androgyny with the guidance of learning. Although the activities of the professional community have the goal of improving the classroom teaching, the Western teacher PLC is the teacher as a professional to grow in the community through the form of cooperation, from the perspective of teacher professional growth. Therefore, teachers, as a researcher and lifelong learner, learn and study in the community and get TPD.

The experience of the teacher H3 from another ordinary school also reflects the barriers of school supportive and shared leadership to teachers' "innovation".

"*Most teachers rely on their seniorities and refuse to make innovations.* " (H3-11-2) "*They teach in the same old way as long as*

the baton of the college entrance examination remains unchanged, no matter how the curriculum changes." (H3-11-3) "*However, they still keep in an old way instead of improvement, so I think we should encourage innovation and reward innovation.*" (H3-11-7) "*But it was truly a Waterloo in my work: all people from the colleagues to the elders in the teaching did not recognize my innovation.*" (H3-11-9)

In the interview, young teachers A3 and B3 from key schools mentioned the influence of the administration and hierarchy of the school teaching and research group, collective lesson preparation group and grade group in the questions about the learning experience of different types of PLC.

"*Basically, when we first came, we had to participate in all the teaching and research activities, for you are new, you must obey the leadership*." (A3-4-3)

"*When I attend public classes and other activities, my tutor gave me a lot of guidance, which is really helpful. But, if I want to innovate myself, or make big changes in lesson plans, sometimes I find it difficult to pass from teachers or school leaders. They will think you*

are unorthodox and do not conform to the assessment or public opinion." (B3-4)

In the research of other countries and regions in Asia, influenced by the Confucian culture, the influence of collectivist culture in the TPLC has also been verified. In the survey of TPLC in Hong Kong, teachers got lower scores in the dimension "shared value and vision" than other dimensions of the PLC (Pang, 2006).

Because of the long-period top-down support of traditional schools-based professional learning communities from the government, schools and teachers have made a progress at the shared personal practice and the collective creativity. Salleh and Clive's research also supports that the Ministry of Education policy in Singapore plays an important role to establish and implement the professional learning communities (Hairon & Dimmock, 2012). In addition, researchers believe that after the long-term development, the professional learning community in Chinese high schools has formed a fixed professional development activity and teacher cooperation to improve classroom teaching, student learning and class management have become a part of daily teaching and learning. Therefore, teachers have a higher assessment of these two dimensions. The results of this study are consistent with the findings of Zhang and Pang for teacher professional learning community in Shanghai. In the

unique Chinese context, these two dimensions appeared highly integrated with each other (Zhang & Pang, 2016).

During the interview, teachers showed divergent views on the bureaucracy management system. Some teachers believe that collectivism and bureaucracy are effective and ensure the progress of work.

Teacher G1 supported collectivism:

"*This leveled management system has its advantages, which is very efficient to launch policies.*" (G1-12-1)

Teacher D2 has different views on this form of management:

"*Few senior people determine all events of schools big or small.*" (D2-12-2) "*Sometimes I feel like a teaching machine without my own special thoughts*." (D2-12-7)

Functionally, the main functions of our primary and secondary school teaching and research group system are studying for TPD such as collectively preparing lessons, listening to classes and evaluating classes, organizing the cooperation between teachers and apprenticeship of new and old teachers, and research on the subject. In fact, teaching and research group in China has made important contributions to TPD in preparing lessons, attending classes and evaluating

lessons and what counts is that it pays more attention to teacher's "teaching". In the investigation of the effect of professional learning, teachers have expressed a higher degree of recognition for the improvement of their own teaching skills.

4.4.1.4 Cooperative teaching is formalistic

In the survey, teachers' recognition of "shared personal practice" is relatively high. To other options like "Opportunities exist for teachers to observe peers and offer encouragement", " Teachers informally share ideas and suggestions for improving student learning" and "Opportunities exist for coaching and mentoring", they show full support. But in the interview, we heard different voices. Teacher G2, who teaches in large-size ordinary schools, gives different views and explanations on collective lesson preparation.

> "*Collective lesson preparation is the crystallization of collective wisdom and also the core wisdom of a teaching group, it is very important, but in my school, this activity is a mere formality.*" (G2-11-1) "*Every week's collective lesson preparation has become an insignificant chat, or a superficial summary of some problems, and it really has nothing substantial.*"(G2-11-2) "*Once leaders come to investigate, the past countermeasures are always taken*

mechanically." (G2-11-7)

Teacher H3 and G2 express their concerns about open classes.

"*I seldom make real comments on others' teaching.*" (H3-7-4) "*It's kind of like you are interfering in other people's privacy and teaching, nor do you think of to be the limelight. It's ok to speak generally.*" (H3-7-5)

4.4.1.5 Activity design cannot meet teachers' needs

TPD activities should be designed on the basis of teachers' needs, but older teachers criticized this in many interviews. D2, as a teacher from a large school, points out the problem of PLC activities.

"*However, these activities provided by schools are like regular activities of the teaching and research group.*"(D2-11-4) "*Experts and university professors from other schools give us lectures most of which is boring, for what they say is understood or very similar.*" (D2-11-5)

H2 has a negative attitude towards the expert training organized by the Education Bureau.

"*In terms of professional activities, the theoretical perspective of*

university scholars is out of line with the needs of primary and secondary school teachers."(H2-11-4) "*Communication is limited, because training classes are only set at fixed time, so we lack the opportunity to follow up feedback, leading that the learning effect is very low.*" (H2-11-6)

4.4.2 Analysis of barriers for TPD in the new PLC

4.4.2.1 Lack of institutional support

Time, space and funds and other aspects due to many involved schools and teachers largely restrict regional learning community. The effect of the training varies greatly.

A2, who was the head of the regional PLC in the district, spoke in detail about the difficulties he had experienced at that time.

"*In the activities of the regional learning community, we actually have little flexibility.*" (A2-13-1) "*The purpose of such activities may be to overlook the actual TPD needs of teachers in the region.*" (A2-13-3) "*Teachers are not very participatory; the interaction in the activity process is therefore limited.*" (A2-13-4) "*If some school leaders do not support, it will be relatively difficult to carry out*

activities." (A2-13-6)

The main operation of Teacher Studio at present still relies on the excellent teachers themselves and the promotion of schools, whose corresponding organizational structure and operating mechanism is still under exploration. C1, from a small-size excellent primary school, talked about the challenges and problems that the current teacher's studio faces.

"*But the time cost involved is very high and it's hard for me to take enough time designing studio activities of a whole year.*"(C1-11-3)

For the long-term development of the studio, we have considered to employ new excellent teachers to replace the work; However, the selection and replacement mechanism are not perfect, so we just 'cross the river by feeling the stones'."(C1-11-4)

4.4.2.2 Teacher learning is not paid much attention

In addition, in our interviews with teachers on strategies for improving linguistic knowledge, teachers gave the opposite answer to the researchers' presuppositions.

A3 is a young teacher who has worked for 6 years. In the interview, he said frankly,

"*I never ask the current teacher now, for I'm afraid of losing face and they may say ' Look, he or she is from XX University, but nothing more than this'; How can I establish authority in front of the students in case that it spreads?*" (A3-11-4)

B2, as a proficient teacher who has worked for many years, has shown the same attitude as A3 in the aspect of his ability and accomplishment promotion strategy.

"*If I ask others, the old teacher is unwilling to tell me and when turning to the new teacher, I will lose face.*" (B2-11-6)

4.4.3 Analysis of barriers for TPD in the virtual PLC

4.4.3.1 Science and technology have not been fully utilized

As a new communication tool, QQ and Wechat group's instant messaging functions meet the needs of modern work. On the one hand, it has become an offline alternative form of the traditional PLC, which can transfer and re-discuss the problems to be solved through time and space in the teaching group and the lesson preparation. On the other hand, as a virtual communication tool, teachers' communication needs to be supported by corresponding equipment. The operation of computers and smartphones has been a hindrance to older teachers.

The communication of virtual space and time requires teachers to participate and respond consciously, and if the teachers' internal driving force is small, it will affect the benefit of the virtual PLC.

4.4.3.2 Learning on the Internet has low participation

In the interview process, the researchers found that teachers in QQ or Wechat group hold different opinions on the benefits of TPD.

Teachers D1 and G1 from large-size schools have recognized the convenience of the subject-based QQ group in conveying messages, but they have different views on the issue of TPD.

"*The participation rate is very low, for most people only receive messages and do not participate in discussions.*" (D1-11-3)

4.4.4 Summary

Without high-quality teachers, there will be no high quality education. The TPD level is the scale of measuring and reflecting the quality of teachers. It is an important factor affecting the quality of education. The foreign language of high school education is an important form of cultivating the national comprehensive quality. It is an important stage for students to lay a good language foundation and create conditions for further study, employment in the future and even lifelong

learning. It is an important content of quality education in the field of basic education in China. English teachers' TPD has attracted more attention from schools and teachers. Teachers are also actively seeking avenues for TPD. In this survey, the main barriers for TPD in PLCs are shown as follows.

Table 4.38 Analysis of qualitative data for TPD barriers in PLCs

Indexes	Concepts	Categories	Theme
B2-11-3 B2-11-4 B3-11-13	Low willingness to share knowledge	Barriers for TPD in the traditional PLC	TPD barriers in PLCs
B1-11-2 F1-11-7 F1-11-8 F1-11-9	High work pressure		
A3-1 H3-11-9 B3-4 D2-12-2 D2-12-7	Lack of democratic and equal supportive and shared leadership		
G2-11-1 G2-11-2 G2-11-7 H3-7-4	Cooperative teaching is formalistic		
D2-11-5 H2-11-4 H2-11-6	Activity design cannot meet teachers' needs		
A2-13-1 A2-13-6	Lack of institutional support	Barriers for TPD in the new PLC	
A3-11-4 B2-11-6	Teacher learning is not paid much attention		
D1-11-3	Learning on the Internet has low participation	Barriers for TPD in the virtual PLC	

For historical, institutional, and cultural reasons, although Chinese schools have the structural foundation for the operation of a PLC, authentic learning aspects should be placed at the center of PLC development (DuFour, 2010; Kennedy and Smith, 2013; Stoll and Louis, 2007), encouraging teachers' reflection and critical conversations about teaching and student learning. Critical conversations are rare within Chinese culture, which is characterized by maintaining harmony and respecting one's seniors (Yin, 2013). Researchers have noted that some teachers act as "passive learners" in following the lead of school authorities.

4.5 Analysis of Strategies for Effective PLCs

Based on the interview data of 27 teachers, this section summarizes the strategies of TPLC to promote professional learning.

4.5.1 Strategies for improving TPD in the traditional PLCs

4.5.1.1 Lessening teachers' work pressure

Under the background of knowledge economy and information age, China is vigorously carrying out educational reform. The quality of education ensures the quality of talents, which provides a better platform for the next generation to gain dignity and happy life. Since 2010, the project of college entrance examination reform has started. In 2014, the Ministry of Education announced that the subject English

was no longer included in the final college entrance examination but adopted that "During the three years of high school, the students were organized for the two English exams, and the examinees could choose the test time voluntarily, and a higher score was included in the total score of the examination." At the same time, policies about assessment method of candidates' achievements, the extra points in the college entrance examination and taking exam in different places are all being implemented step by step.

The college entrance examination definitely has a corresponding impact on the TPD and how the current reform will affect schools and English teachers. This study did not conduct in-depth interviews. Therefore, further discussion is no longer made.

In view of the restrictions on the time and funds of TPD, the method adopted by the excellent school E in its teaching and research reform has become a successful case in this study. Through the introduction of teachers in the school E, they break through the grade restrictions between the academic groups of the whole school and gathered all the English teachers into a teaching and research group so as to help teachers achieve TPD and provide them with adequate training and discussion time. On Every Wednesday, they take time of two classes for research and training

activities. In this activity, there were only a few teachers participating and the responsible person was selected from them to arrange related activities. The teachers who did not participate correspondingly undertook the teaching tasks such as the English test paper and the correction of English homework on the same day. Corresponding schedule for TPD activities is made according to the academic year. School E is an intermediate size school with fewer teaching classes, and its teaching staff is relatively perfect as an excellent school. With the joint efforts of school leaders and teachers, the educational reform has received good reviews so far.

> "*Over the years, school leaders have paid more and more attention to the long-term effects of TPD.*" (E2-9-1) "*In order to help teachers achieve TPD, a lot of efforts have been made in the school.*" (E2-9-2) "*But now my trusted colleagues can help me with my students' homework and papers, so I have nothing to worry about and just concentrate on researching and studying wholeheartedly.*" (E2-9-7)

4.5.1.2 Establishing a democratic and equal supportive and shared leadership

In the evaluation of supportive and shared leadership, the three options "The leader of PLCs is proactive and addresses areas where support is needed", "The

leader can take advice from other teachers to make decisions" and "Opportunities are provided for teachers to initiate change" get the lowest evaluation. The traditional PLC in Chinese schools is a top-down form of development. It is different from the bottom-up form of the western PLC that is to adapt to the social and educational reform. In Shan Zhiyan's research, the cultural ecology of the PLC in Chinese schools is explained in detail. He believes that "the Chinese PLC is based on collectivism, focusing on the interdependence among people and the importance of the collective and emphasizing harmony, authority and unity. Chinese teachers enjoy common values, but management tends to be administrative and authoritative. Therefore, teachers have shared values and vision in the PLC, and they are committed to the collective responsibility of students' learning, characterized by TPD mechanism and teacher apprenticeship. At the same time, reflective professional inquiry, respect and trust need to be strengthened (Shan, 2014)."

Although the collectivism of the Confucian culture is not conducive to the reform of the TPLC, the learning organization to construct a PLC still has its irreplaceable role. In Singapore, Salleh and Clive found that the traditional bureaucratic and top-down Singapore education system has ensured the implementation of the education policy and the promotion of the PLC at all levels.

However, the work efficiency and substantial results of the TPLC mostly depend on the autonomy of teachers and the enthusiasm to participate in TPD activities (Hairon & Dimmock, 2012).

This study believes that current reform of the "supportive and shared leadership" in the PLC depends on the construction of school culture, the cooperation and dialogue between the school leaders and the teachers. School leaders should devote themselves to building a spontaneous, collective creativity atmosphere, set an example, and create an atmosphere of equal dialogue among teachers.

In response to this problem, teacher A2, as the head and administrative leader of the former PLC, puts forward some specific reform proposals.

> "*Moreover, the leaders should strive to create an open and free cultural atmosphere, respect the individual differences of teachers, and cultivate them to be the teachers with unique teaching style and individualized development, thus working together to form a democratic, equal and cooperative working mechanism and weaken the administrative color of learning organizations.*" (A2-12-5)

As an affiliated high school of Northeast Normal University, school C is a newly established experimental middle school in recent years. The school has close

cooperation with the education and teacher education research center of Northeast Normal University. The school's idea and the cultivation of school culture are the result of the cooperation between the two sides.

As the head of the English group, C1 puts forward more innovative ideas in the "democratic decision-making" and "shared value and vision".

> "*The origin of these two concepts is still in the west, but this does not hamper the practice in the East; I think this is mainly about an open campus atmosphere.*" (C1-12-1) "*On the one hand, school leadership is the key and their ideas of running a school are very important.*" (C1-12-2) "*On the other hand, teachers should be able to truly cooperate and share a democratic atmosphere.*" (C1-12-7)

The open cooperation and sharing culture that the school is committed to building has begun to take shape. Teachers can get along easily and happily, live in harmony with each other and learn to grow and progress together. C3 has a deep feeling as a young teacher.

> "*Although my colleagues are much older than me, the atmosphere here is very good.*" (C3-12-2) "*They look after me and help me like family members.*" (C3-12-5) "*During my undergraduate internship, I*

knew that it is not easy to enter other teachers' classes, but there is an open teaching atmosphere in our school." (C3-12-8)

4.5.1.3 Improving activity design

One of the goals of the PLC is to enhance teachers' learning and teaching, and ultimately achieve the improvement of students' learning. As for how to carry out proper TPD activities around these two items and promote TPD, various high schools in Changchun are still in the trials.

The research on the design principles of TPD activities provides a way of thinking. In the report of the National Clearinghouse for English Language Acquisition, it is found that the continuous TPD of English teachers depends on five principles. First, teachers need to transform themselves into the identity of learners; on this basis, TPD needs to depend on teachers' previous experience, knowledge and skills and then to provide continuous activities and corresponding feedback. After the end of the activity, we need to measure the changes of teachers' knowledge and skills, and the changes of students' academic performance. These five principles can promote the virtuous circle of English TPD. (Loucks-Horsley, Stiles, Mundry, Love & Hewson, 2009)

In the survey of eight different types of TPD activities in Australia, it has

been confirmed that the length of the activities, the duration of continuous effective communication among the members and the follow-up feedback activities have a significant impact on the TPD. Among them, follow-up feedback activities have a significant effect on teachers' knowledge growth. The design of PLC should mainly consider two factors: activity time and content. The activities are mainly divided into two directions: activities focusing on class management and activities centered by students (Ingvarson, Meiers, & Beavis, 2005). This is also emphasized in the study of the American TPD project. The most effective factor in the design of TPD activities is to combine the activities of teachers every day and the learning and teaching of specific subjects in the work of teachers. If teachers' learning and teaching are simplified as the training of abstract theory and teaching methods, its efficiency will decrease (Hammond, Wei, Andree, Richardson, & Orphanos, 2009).

As a result, the design level of the PLC must first consider the TPD needs, and the activities for teachers with different teaching ages and backgrounds will have corresponding differences. The sustainability and effectiveness of activities are factors that designers should evaluate and budget at the beginning.

For the content of collective creativity, the research of Desimone (2002) and others have listed the activities that first can enhance the relevant subjects'

knowledge. Secondly, the content of each activity needs consistency, and it should be related to the practice in Teachers' work. On this basis, the knowledge of teaching method should be assisted to help teachers to use the corresponding theory of students' physical and mental development, new science and technology and other knowledge to promote students' learning.

One of the successful points of school E's reform about TPD is to consider teachers' professional needs and then design corresponding activities.

> "*When I took part in it, I began to instruct students and give lectures, I found out how much the TPD activity helped me.*" (E3-6-5) "*At that time, elite teachers, new teachers, and our corresponding masters are selected to discuss and solve problems, which make us feel very good, just like a group of people working together.*" (E3-6-8)

In investigating the school TPD activities, the teacher F3 from the key school F gives a positive evaluation of the activities.

> "*Before each activity, the teaching and research group will note us what kind of activities in (QQ / Wechat group) and ask us what kind of activities we want to do.*" (F3-13-3) "*I think I really benefited a lot from that event.*" (F3-13-9)

Compared with school E's starting from teachers' needs and basis on teachers' practical design collective creativity activities. School F is characterized by expanding the international vision of the school and absorbing advanced theories and teaching methods of international education development. They both have their own characteristics. Compared with the traditional TPD activities, they have made different breakthroughs from their respective needs and achieved good results.

On the job training is a relatively common post professional training in TPD. For the content and activity design of in-service teacher training, we need to give full consideration to TPD needs. After the implementation of the new curriculum reform, school G invited the teachers from the first batch of pilot schools throughout the country to carry out special training, and gave a detailed explanation of the curriculum reform, which has provided great help for the implementation of the reform.

> "*They taught us the experience of curriculum reform at that time, and the teachers who participated in the training still felt it very useful.*" (G3-13-2)

4.5.2 Strategies for improving TPD in the new PLCs

4.5.2.1 Improving the level of teachers' collective creativity

Teacher professional learning can be divided into four different levels. The first three levels depend on teachers' own learning. The fourth level is concerned with the activities of collective learning. The former mainly refer to the degree of acquisition and learning of new knowledge, new information and new data by teachers themselves, trials of applying these knowledge, information and data to practice and teachers' reflection on the use of these knowledge (Darling-Hammond *et al.*, 2009). Although these only belong to a learning process that teachers cannot see at the individual level, how to internalize the knowledge and information in the PLC into their own skills and to impart to the students depends on the progressive learning layer by layer.

In the process of teachers' individual professional learning, F2 has improved the classroom teaching in combination with the situation in his own teaching and also achieved good results.

> "*In my class, I attach great importance to the infiltration of emotions, the infiltration of mother's day, my mother, and my mother's pictures, to lead the students into the situation I want step by step.*" (F2-6-4) "*It also makes me realize that in the future, I should create more opportunities in my class to give students, not*

just a class of gratitude." (F2-6-6)

The last level of teacher learning is collective creativity and sharing. Collective creativity provides corresponding support, new ideas, innovations and challenges for TPD and it can also bring teacher learning to a new level (Darling-Hammond *et al*., 2009). Wong also supports this point in the study of TPD of the Chinese junior high school mathematics teaching and research group. The introduction of the external resources of the school is one of the effective factors to promote the TPD in the school mathematics group. The school has established good cooperative relations with university professors and other special mathematics teachers. The "student oriented teaching" TPD activities designed under the three-party cooperation has also achieved good fruits in improving teachers' teaching (Wong, 2010).

4.5.2.2 Building a common vision of collective creativity

Compared with the traditional PLC, the Teacher Studio and the regional PLC are more consistent with the needs of TPD in the five dimensions of the effective PLC, "supportive and shared leadership", "shared values and vision", "collective creativity", "support conditions" and "shared personal practice". Both of them are weaker in terms of administrative services, and are more targeted for TPD, teaching

and learning services.

A young teacher from school G3 is an activist in A1 studio. She believes that the Teacher Studio has many positive effects on TPD.

> "*It is one of the most beneficial activities that I have benefited from the course of lecture and evaluation.*" (G3-6-3) "*This situation touches the needs of TPD as compared with the lectures offered by other university professors and national famous teachers.*" (G3-6-5) "*It can stimulate the interaction between listening and evaluating disciplines and enhance the cognitive level of TPD in this participatory learning.*" (G3-6-6)

Most of the regional PLCs are organized and managed through administrative functions of the teaching and research section of the Regional Education Bureau. It integrates the resources of different schools in the regions, and has a favorable influence on the TPD in the improvement of weak schools.

I1, a teacher in the most ordinary school told the author that at the beginning of her entry, she was provided with many teachers' guidance, teaching skills and class management skills through the activities of disciplinary regional learning community provided.

"*When I joined the learning community, I met many senior seniors. They gave me different suggestions.*" (I1-3-6) "*I tried it one by one, and finally I figured out some of my own ways.*" (I1-3-7)

H3 also has the same experience in training.

"*This is a great inspiration to me this time.*" (H3-6-3) "*After I asked her, I understood that it is not that students did not want to write well, but they did not know what a good standard was.*" (H3-6-6)

Teachers' collective creativity requires the cooperation of all the teachers in the community, and it is often difficult to complete by them. In the current research, the Teacher Studio is a more efficient type of collective creativity. First of all, it has a famous teacher as a guide to carry out activities. Secondly, teachers who participate in the teachers' workshop are mostly motivated by spontaneous learning, and are more enthusiastic to participate in discussions and sharing. Moreover, it breaks the barriers of teachers in schools, and teachers there can speak freely without having to worry about too many administrative and other interpersonal factors.

4.5.3 Strategies for improving TPD in the virtual PLC

4.5.3.1 Making full use of network resources

Changchun Education Bureau and schools are currently developing

platforms and systems for online communication among teachers. The teachers interviewed showed interest in learning information-oriented platform.

E1 is the teacher in charge of the excellent PLC of the city. In the interview, he mentioned the functions of other virtual professional learning communities.

> "*Our school is now working with a university, and we have developed a set of online learning and communication platform from the 'English learning club' abroad.*" (E1-5-1) "*In that platform, we provide resources for English learning.*" (E1-5-4) "*I think the learning function of this platform will be more reliable than that of QQ group and Wechat group.*" (E1-5-6)

QQ group and Wechat group as an instant messaging tool still play an irreplaceable role in large-size schools.

> "*There are many classes in our school, therefore, QQ and Wechat are our most convenient way of communication.*" (G1-6-1)

4.5.3.2 Cooperation to promote knowledge interaction

The excellent secondary school a set up a collaborative teaching practice field in 2016 on the basis of its own resources and government support. With the support of the network environment, the school, the parents and the society cooperate

to construct the network resources to realize the sharing of resources.

The school ranks top in high schools throughout the country, and most students will go to the 985 colleges or universities in China. Therefore, a considerable number of senior three students need to prepare for IELTS and TOEFL exams. Based on students' needs, the English group has built a special website for the promotion of academic English writing, and invited students, parents, teachers and university professors out of school to participate in the construction and daily operation of the website.

Every week, the English group issues an English writing test. Students get the questions online and enter the "simulated examination room" to complete the exercises. The corresponding teachers, experts and university professors off the campus will answer in the "simulated examination room" section. After all the reference personnel completed, they enter the "cooperative evaluation" link. In this section, all people are anonymous scoring for the exercise. After finishing the "cooperative evaluation", the next link is "online answering". In this link, university education, teachers out of school and teachers of the English group will explain and answer all the workings. Teachers and students participating in the activities can share their feelings on this online exchange.

Teacher A2 has a high evaluation of this practice.

"*The greatest highlight of this practice is the participation of parents and the addition of famous teachers outside the school.*"

(A2-6-1)

4.5.4 Summary

In a deep interview for teachers and PLCs, researchers found that the "supportive and shared leadership" and "supportive conditions" in the Chinese school environment are more from the impact of the school. In particular, the traditional teacher PLC is in urgent need of changing its development mode and thinking in the era of knowledge economy and educational reform.

In the test of the correlation between TPD and effective PLC, the highest correlation coefficient of shared personal practice, collective creativity and shared values and vision and TPD evaluation has been obtained.

In the evaluation of the "shared personal practice", the two options "after completing teaching, my colleagues can give me the corresponding classroom evaluation and feedback", and "I can get the guidance and help of other teachers " get the lowest scores. Shared personal practice is most closely related to TPD, which is the practice of improving TPD in the PLC organization, in order to solve the problems

faced by TPD. It connects the knowledge nodes of all members of the organization, and when all members are able to share their knowledge and experience, the members of the group can maximize their knowledge, skills and attitude.

In the evaluation of "collective creativity" attribute, scores of the three options "collective creativity can provide the same TPD opportunities to all teachers", "Teachers are full of enthusiasm and confidence for projects to promote TPD" and "In order to improve TPD, teachers have developed a good cooperative relationship" are the lowest.

The purpose of collective creativity is to expand the scope of collective learning within the PLC. This level focuses on the construction of co-culture and the depth and breadth of cooperation among members. It requires achieving equal exchange, breaking the power limit of the executive leadership and realizing power sharing in the learning community.

In the evaluation of the variable “shared values and vision”, "my present school pays more attention to the students' learning than the test scores", "To achieve a certain goal, we share the scientific measurement results to determine the sequence of activities" and "In the PLC, everyone negotiate and decide “shared value and vision", the three get lowest scores. Shared values and vision means that members of

the community can establish cooperative goals, learning prospects and TPD expectations recognized by all members. It can guide professionals to learn the direction of activity planning in the community.

The core of the PLC is to learn. Therefore, the establishment of an effective PLC must communicate the educational ideas and value orientation of the school through team learning, change the mental model of the teachers, form common values and common vision and make each teacher understand the common goal, so that all the teachers are classmates to study actively and dedicate themselves to the transformation of the school.

However, every high school has its own characteristics and advantages and disadvantages of its own development. Therefore, the transformation of the school to the effective PLC depends on the concerted efforts of teachers and schools. In addition, the education administration should give more support to macro policy and finance.

After interviews with 27 teachers and analysis of materials of PLC, researchers found factors or strategies that affect TPD. The strategies for TPD in PLCs are shown as follows.

Table 4.39 Analysis of qualitative data for TPD strategies in PLCs

Indexes	Concepts	Categories	Theme
E2-9-1 E2-9-2 E2-9-7	Lessening teachers' work pressure	Strategies for improving TPD in the traditional PLC	TPD strategies in PLCs
A2-12-5 C1-12-1 C1-12-2 C1-12-7 C3-12-2 C3-12-8	Establishing a democratic and equal supportive and shared leadership		
E3-6-5 F3-13-3 G3-13-2	Improving activity design		
F2-6-4 F2-6-6	Improving the level of teachers' collective creativity	Strategies for improving TPD in the new PLC	
G3-6-6 I1-3-6 H3-6-3	Building a common vision of collective creativity		
E1-5-1 E1-5-4 G1-6-1	Making full use of network resources	Strategies for improving TPD in the virtual PLC	
A2-6-1	Cooperation to promote knowledge interaction		

In the practice of high school teachers' TPD in PLCs in China, there are still a lot of mystiques. How to transform teachers' daily work and learning into TPD opportunities, and transform their daily discourse into professional discourse to achieve their effective TPD. It's urgent and necessary for teachers, educators and researchers to work together breaking through barriers between theory and practice, thus to achieve effective TPD.

4.6 An Overview of TPD Differences in TPLCs at Different School Levels

Table 4.40 An overview of TPD differences in school TPLCs at different levels

	Excellent resources	**Average resources**	**Poor resources**
Opportunities	Collective lesson preparation; heterogeneity class; Collaborative teaching experiment of network PLC ; One lesson three reforms; the Teacher Studio	Collective lesson preparation; heterogeneity class; Network PLC U-G-S cooperation	Collective lesson preparation; Heterogeneity class; distance continuing education and training; weak school reform activities organized by the Education Bureau.
Barriers	Great pressure on college entrance examination, high competition among teachers, low willingness to share knowledge, lack of supportive and shared leadership for democracy and equality, lack of mechanism guarantee for Teacher Studio, and lack of attention for teachers' learning;	Great pressure on college entrance examination, a lack of democratic and equal atmosphere for teachers' PLC; Activity design cannot meet the needs of teachers; and the participation rate of online learning is low.	The management system of the bureaucratic system prevails; Cooperative teaching is formalistic; the design of the activities cannot meet the needs of the teachers; the learning community of science and technology and the network is not fully utilized.
Strategies	The introduction of advanced academic ideas, the establishment of an open cooperation and sharing culture; collaborative cooperation to promote knowledge interaction.	Teachers' cooperation alleviating the pressure of teachers' work, improving activity design, and full use of network resources.	Improving activity design; seeking external resources; building a common vision of collective creativtiy; participating in famous teachers' studio and regional PLC in famous universities;

There are more opportunities for TPD in excellent schools. Relying on their own resources, the school has established the three-level system of integrating the

traditional PLC and the new PLC. The biggest barrier faced by this type of school lies in the pressure of entrance examination and the competition between teachers. On the one hand, the focus of teachers' work is to improve their academic performance, and teachers' own learning has not received corresponding attention. On the other hand, the competition among teachers and the interpersonal atmosphere in the academic hierarchy may lead to the low willingness of teachers to share knowledge in TPD activities. Moreover, after the establishment of the Teacher Studio, there is a lack of good mechanism guarantee in the operation process, mainly relying on the promotion of the famous teachers themselves. In recent years, excellent schools have promoted the creation of open cooperation and shared culture with the help of external universities and their leaders' knowledge and ideas. In addition, excellent schools are constantly absorbing social resources to promote learning and development among their own schools, teachers and students.

The TPD opportunities of schools with general resources mainly focus on three forms: collective lesson preparation, heterogeneous class, and the virtual PLC promoted by the Education Bureau. Among them, excellent schools jointly improve TPD with Northeast Normal University through U-G-S mode, showing different forms from other schools. Job pressure and the lack of a democratic and equal

atmosphere of TPD also appear in schools with general resources. Some teachers reflect that the design of TPD activities cannot meet their development needs. In the virtual PLC, teachers believe that the participation rate of online learning is very low. This type of school has arranged a special time to support TPD in the leadership, which has received good feedback from the teachers. The strategy of improving activity design and utilization rate of virtual resources has effectively promoted TPD in this type of school.

Schools with poor resources face more challenges in TPD. In order to help the weak schools improve, the Education Bureau has launched expert lectures and remote training activities. However, due to limited resources, on the one hand, only some teachers can get TPD opportunities in the Education Bureau. On the other hand, due to the limited school resources, the support of the network technology, computer and other scientific and technological equipment, the school cannot promote such activities in depth and breath. In order to get more opportunities for TPD, some teachers choose to participate in the activities of the Teacher Studios in key schools and the regional PLCs and obtain TPD opportunities from the outside.

To conclude, it is found that the major differences in opportunities, barriers and strategies for TPD in the PLCs of researched schools in Changchun are reflected

in the different levels of school, that is, the difference of school resources.

CHAPTER 5

CONCLUSION AND SUGGESTION

The objectives of this study were 1) to analyze the PLC participation and TPD (learning outcomes) of High School English teachers with different backgrounds; 2) to analyze, compare, and identify factors affecting level of PLC participation and learning outcomes of teachers with different contexts; 3) to analyze the opportunities and barriers affecting teachers' learning in PLCs and the outcomes; and 4) to propose strategies for enhancing effective PLCs in Chinese high schools. Descriptive research using questionnaires and interview techniques was employed in this study. The samples were 422 Chinese English teachers from high schools in Changchun, Northeast of China. Twenty-seven teachers from 9 selected schools were purposively selected to be interviewed in depth. Data were analyzed through use of statistical and content analyses. Research findings were as follow:

5.1 Summary of Research Conclusions

1) On average, the levels of PLC participation and learning outcomes (TPD) of English teachers were moderate.

2) School contexts and teacher background affected the levels of PLC participation and learning outcomes. The school contexts, teaching experiences and

PLC participation level accounted for 73.5% of variances in teachers' learning outcomes.

3) Opportunities and barriers that affects teachers' PLC participation and learning outcomes were the ways and types of which teachers worked together in schools.

4) It was found that traditional model of school-based PLCs needed to reform toward a learning organization emphasizing on the teaching and learning.

5.2 Research Discussion

Under the background of information age knowledge economy and lifelong learning, in order to promote students' learning with quality teaching all countries have started the school reform oriented by learning organization construction since the 1980s. Scholars represented by Hord and DuFour etc. found in their research that teachers, as an important part of a school, have a positive impact on school-based curriculum development, teachers' cooperation, school improvement and student learning (DuFour & Eaker, 2005; Hord, 1998). Since then, the research on the "learning organization" and "professional learning community" composed of teachers in schools has become a hot issue in the field of education. The teachers' PLC came into being in this context, and the three words of this term concisely explained its

organizational characteristics. Teachers in the school form a cooperative group for the purpose of professional learning, which emphasizes the cooperative learning and professional growth of teachers in the workplace (Hipp & Huffman, 2003).

After more than 30 years of research, scholars have studied the components, construction steps and effective operation of professional learning community. Among them, factors such as “Shared values and vision”, “Supportive and shared leadership”, “Collective creativity”, “Shared personal practice”, “Supportive conditions”, professional reflection and good trust and interaction are identified as the key components of an effective PLC (Bolam *et al*., 2005; DuFour & Eaker, 2005; Hord, 2004). On this basis, scholars focus on investigating the utility of PLC. Teachers’ PLC has been proved to play active role in promoting education reform, student academic performance, teachers’ attitude change, teachers’ practice, teacher identity and TPD (Lee, 2015; Lee, Zhang, & Yin, 2011; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; Vescio, Ross, & Adams, 2008).

Based on this, this study investigated TPD opportunities, barriers and strategies in the PLC of Chinese high school English teachers in Changchun. Using " Draft questionnaire of English Teachers’ Assessment of Professional Learning Community and Professional Development in the Chinese High School" investigate factors influencing teacher professional development participation in PLC. On the basis of the questionnaire survey, in-depth interviews were conducted to investigate

the experience and feelings of 27 high school English teachers on "learning opportunities, professional learning disabilities and professional learning strategies" in the PLC.

It is found that the order of the level of participation in PLC of teachers in small-size schools is different with others. The level of participation of the attribute “Collective creativity” is highest rather than “Shared personal practice”. The researcher speculate that small-size schools have relatively less teachers, thus the schools emphasize collective power and easily organize collective activities for all the teachers. Therefore, teachers are easily and positively attending collective activities in PLC.

The order of the level of participation of teachers in excellent schools is different with average schools and poor schools. The level of participation of the attribute “Shared values and vision” is lowest rather that “Supportive and shared leadership”. It is because that the excellent schools have more fund and resources, the leaders in excellent schools could give more supports to teachers. Therefore, teachers give relatively higher evaluation in this attribute than average schools and poor schools.

The order of the level of participation of teachers with 6-10 teaching years is different with other teachers. The evaluation of attribute “Collective creativity” is higher than attributes “Shared personal practice”. After a period of 6-10 years teaching, teachers found that “Collective creativity” is more and more important and it is more efficient than “Shared personal practice”. Therefore they have highest evaluation in “Collective creativity” in the survey.

Based on the results of questionnaire survey and in-depth interviews, this paper presents the general situation of the PLC of Chinese high school English teachers in Changchun and analyzes the influencing factors of the PLC. The barriers to TPD in the PLC and the promotion strategies are also summarized.

5.2.1 General situation and influencing factors of PLC participation

This survey investigates the development of six types of PLCs. Among them, the teaching and research group and collective lesson preparation group are the most common types of PLCs, while grade group and subject-based QQ/Wechat groups are in second place. As two new types of PLCs, teacher studio and regional PLC are still under development. The participation rate of collective lesson preparation group is the highest, which is 93.8%. The participation rate of regional PLC is the lowest, which is only 15.6%.

This research investigates the situation of PLCs with different resources and sizes. The schools that possess more resources are in the better position to develop their PLCs. The number of new PLCs in teacher studio and regional PLC is much higher than that of other schools. The PLCs in large-size schools are the most balanced; the number of PLCs of various types is slightly higher than that of other sized schools.

In the development of PLCs in Changchun, the traditional teaching and

research group and collective lesson preparation group are still the main forms, the subject-based QQ/Wechat group has become an important network virtual form following the development of times. The three traditional organizational forms teaching and research group, collective lesson preparation group and grade group, have the characteristics of PLC. The teacher studio as a new PLC plays a more significant role in TPD. One hand, the teacher studio attracts the participation of weak teachers with junior college degree and no English certification. On the other hand, it gathers the teaching experts, the novice teachers and the teachers with master degree.

Among the five variables of PLC, "Shared personal practice" gets the highest score, followed by "Collective creativity". The results of this research are consistent with the results of Zhang and Pang's investigation into Shanghai teachers' PLC. Under the influence of traditional Chinese teaching organizations, there is a high correlation between the two variables of "Shared personal practice" and "Collective creativity" (Zhang & Pang, 2016). We believe that after long-term development, PLCs in Chinese high schools have formed fixed professional development activities, and teachers' cooperation in improving classroom teaching, student learning and class management has become part of daily teaching and learning. Therefore, teachers have a high evaluation on these variables.

Shan's research on the teaching and research group of Chinese primary and secondary schools gives a detailed description and explanation of the activities of the teachers' PLC. "Teachers' lesson preparation system is based on teaching and research group or collective lesson preparation group to organize teachers to carry out a series of activities, such as collective study of syllabus and teaching materials, analysis of learning situation, making teaching plan, decomposition of lesson preparation tasks, review and approval of lesson preparation outline, feedback of teaching practice information, etc., which is an important organizational form to improve the quality of lesson preparation. The basic activities of the lesson preparation system include mutual discussion, individualized revision, listening to lectures, course evaluation, summary, evaluation and reflection. Collective lesson preparation reflects the advantages of unity and cooperation, and has become an important platform for TPD (Shan, 2014).

"Supportive and shared leadership" gets the lowest score, and the researchers speculated that the overall evaluation of this variable was influenced by the background factors of Chinese society itself. In China's centralized democratic social management system, the PLC with Chinese characteristics developed from the teaching experience of the Soviet Union, its democratic, cooperative management and

organizational atmosphere has certain differences between the PLC developed from the western country form. Under the influence of the bureaucratic environment, the localization practice of the PLC and the improvement process of the traditional PLC highlight the progressive development path (Wang & Collard, 2009). On the other hand, teachers' cooperation under policies and official authority has a sense of distance like "visible without spirit" (Lee *et al*., 2011). Rather than open and critical collaboration, teachers are more likely to "discuss strategies for improving student learning with colleagues in private." "Leaders actively help teachers solve problems", "leaders can make decisions after listening to teachers' opinions", "leaders can help me share responsibilities or give rewards when I make innovations", etc., all of which are lower than average in the evaluation of leadership style and decision-making activities.

Zhang, Yuan, & Yu's research on PLC in Shanghai also confirmed that school leaders are not willing to delegate their power to the PLC, and it is difficult to establish a completely equal organizational atmosphere in the PLC. The teacher said: "cooperative culture does not exist completely, I dare not disobey the opinion of the leadership. Of course, I dare not comment on what the leaders said was wrong (Zhang, Yuan, & Yu, 2017).

In the survey on the influencing factors of PLC, the independent sample T test and the single-factor ANOVA analysis showed that teachers of different ages had significant differences in the overall evaluation of effective PLC and TPD. Overall, young teachers under 30 rated higher than teachers over 31. Among them, teachers aged 41-50 years old have lower evaluations than teachers of other ages in all variables. With the increase of teachers' teaching experiences, their overall evaluation of effective PLC and TPD is decreasing. Teachers with master's and bachelor's degrees were significantly higher than those with junior college degrees in the evaluation of PLC. Teachers with TEM 8 and TEM 4 certificates have significantly higher evaluations than those without certificates. Teachers from schools with excellent and poor reputation and resources have a significantly higher evaluation of effective PLC than those from schools with average reputation and resources. The evaluation of teachers in large-size schools on effective PLC is significantly higher than that in medium and small-size schools.

Wei (2014) also found in his research on teachers' PLC in China that the increase of teachers' teaching experiences had a negative impact on the evaluation of PLC. He found that many teachers use the same teaching plan and teaching method almost every year after they get certain recognition, without paying attention to the

new requirements of the society and students' changes on their teaching (Wei, 2014, p.93).

Pearson range correlation analysis shows that the four variables of effective PLC, namely "Supportive and shared leadership", "Collective creativity", "Shared values and vision" and "Shared personal practice", are positively correlated with TPD. Therefore, it has also been proved in the Chinese environment that the PLC has a significant positive impact on the TPD. Among them, "Shared personal practice" has the most significant positive impact on TPD. Its γ coefficient was 0.826 (P value was 0.000), reaching a significant level. In other words, the cooperation depth and breadth between teachers in the aspects of students' learning, teachers' learning and work, such as discussion, dialogue, observation and evaluation, will have a significant impact on TPD. “Collective creativity” has a positive influence on TPD. Its γ coefficient was 0.785 (P=0.000), reaching a significant level. That is to say, the cooperative culture of learning and working together in the PLC and its practice will contribute to the TPD.

The research results are consistent with those of other Chinese scholars on teachers’ PLC. Yu J. M. in the study of teachers’ PLC in junior high school, found that three variables of English teachers' PLC: “Supportive and shared leadership”,

“Collective creativity” and “Shared personal practice” and three variables of English teachers' self-efficacy has a high correlation, moreover, the “Supportive and shared leadership” and class organization and management have the highest correlation, the correlation coefficient is 0.728 (Yu, 2015). Through the regression analysis, we can find that, firstly, “Collective creativity” and “Shared personal practice” in PLC have a significant impact on the improvement of English teachers' teaching strategies and skills. Second, the “Supportive and shared leadership”, “Collective creativity”, “Shared personal practice” and interpersonal relationships in the PLC are of great help to the teacher's classroom organization and management. Third, PLC can help English teachers improve their ability to deal with the teaching materials.

5.2.2 Development barriers and opportunities in PLC

In the Outline of National Medium-Long term Educational Reform and Development Plan (2010-2020 years), "strengthening the construction of teachers" has been officially listed as the top priority of China's education work in the past 10 years. "Teachers are the foundation of education plans, and without good teachers, there is no good education." "Rigorously enforcing teacher qualifications, improving the quality of teachers, and striving to create high quality professional teachers with noble ethics, exquisite business, reasonable structure and full of vitality." Over the

past few years, Education departments have set up a number of special projects for this purpose. The ministry of education issued <Opinions on vigorously strengthening the training of primary and secondary school teachers>, and <Guidance on deepening the reform of the training mode for primary and secondary school teachers for comprehensively improving the training quality>. The state has provided strong support for TPD in terms of policies and funds.

In order to meet the needs of TPD, Changchun education bureau set up a special project of TPD.

First, the provincial government has increased the financial support in Changchun for teacher education to ensure the investment in TPD. According to <The implementation opinions of people's government of Jilin province on further promoting the balanced development of compulsory education>, the funds for teacher training shall be included in the provincial budget, new financial funds for education should focus on teacher training, all primary and secondary schools (kindergartens) shall be allocated 5 percent of the total annual public expenditure budget for teacher training. It is necessary to establish a teacher training management system, strengthen the dynamic monitoring of provincial and local training, and improve the use efficiency of teacher training funds.

Second, Using the advantage of the Internet, the education bureau has established a "online-offline" combination of traditional PLCs and virtual networks. Distance training for the continuing education of all primary and secondary school students in the context of "Internet plus" will be implemented, and the training system for all primary and secondary school teachers will be implemented with an average of no less than 90 school hours per year. The construction of training courses supermarket, innovation of training mode, reform of training forms, improvement of training evaluation methods, actively promote the city's primary and secondary school teachers classification, stratification, post training, to comprehensively enhance the professional development level of primary and secondary school teachers in the city. They create a platform for teachers to study online and carry out teaching follow-up guidance and research activities in the province.

Third, the starting point is to cultivate students' core quality, taking <Curriculum standards for teacher education>as the guide, proposing “professional idea and ethics”, "professional knowledge" and "professional ability" in the professional standards for primary and secondary school teachers, gradually explore cultivation mechanism and innovative demonstration quality courses, and build a number of targeted, leading, cutting-edge courses that can meet the needs of teachers.

Build a "course supermarket" by customizing courses to excellent training teams and full-time and part-time training teachers, and purchasing courses as a supplement. Select video lecture courses, increase the proportion of practical courses, enrich teaching examples, teaching courseware, micro class, famous teacher BBS, psychology, information technology and other courses, plan to achieve 80% self-sufficiency of teacher training courses by 2019. A complete and open course selection system shall be established to meet the training needs of teachers.

Fourth, take the mixed online-offline training as the main mode, and gradually provide personalized course, sharing resource, making learning plan, tracking learning situation and other services for each student. Training will be provided to teachers who are older, in remote areas and have difficulties in online learning through the distribution of CD or information kits.

Six different types of PLCs play different roles in TPD. The traditional PLC has the highest utilization rate, but after years of development, the bureaucratic features has been gradually criticized by teachers, failing to meet the needs of teachers' innovation and building a platform for democratic communication. The lack of democratic and equal organizational atmosphere has become one of the biggest obstacles to the transformation of traditional PLC. Shan starts from the construction

of a PLC with Chinese characteristics, and believes that Chinese schools shall establish a long-term operation and guarantee mechanism appropriate to regional and school characteristics. "First, establish a democratic, equal and cooperative working mechanism and weaken the administrative color of the community. The second is to establish incentive and developmental teaching and research evaluation mechanism. Third, various forms of professional guidance system for teachers in the school shall be established (Shan, 2014). Although the emerging PLC is novel in form, it provides teachers with a platform for professional communication and learning. However, its organizational structure, time and financial support, operation mechanism is still need to be improved. Several studies have confirmed the important role of "supportive and shared leadership" in the development of PLC (Stoll & Louis, 2007). However, under the Confucian culture background of bureaucracy, how to establish fair, equal and democratic dialogue and cooperation, rather than the task-driven and supervision under administrative authority, still depends on further practice.

Another barrier brought by the lack of cooperative culture and democratic and equal organization atmosphere is the low willingness of teachers to share in the PLC. In an isolated, individualistic campus environment, asking for help or asking questions can be seen as a sign of lacking professional ability, which leads to teachers'

difficulty in self-exploration in a closed environment. According to the research conducted by scholars in Hong Kong (Lee *et al.*, 2011), Singapore (Hairon & Dimmock, 2012), Taiwan (Chen, Lee, Lin, & Zhang, 2016) and Mainland China, organizational trust and emotional bond in PLC can effectively promote the democratic atmosphere of sharing willingness, sharing practice and sharing among members. Ronfeldt *et al.* (2015) found in a survey of 9,000 teachers in Michigan that good cooperation between teachers and schools could help students improving scores in math and reading (Ronfeldt, Farmer, McQueen, & Grissom, 2015). In the professional standards for middle school teachers promulgated by the ministry of education of China in 2012, teachers are required to have the spirit of teamwork and actively carry out cooperation and communication, and to cooperate and exchange with colleagues, share experience and resources together. Therefore, cooperation and sharing is one of the basic professional abilities of teachers.

Lack of corresponding support is still one of the obstacles to the development of PLCs. The college entrance examination, in which students' academic performance is the only admission criterion, still imposes great pressure on teachers. All the teachers in the interview gave negative answers to the question that "my school pays more attention to students' learning rather than test scores". Teachers

believe that "the college entrance examination scores as the admission criteria does not change, the pursuit of scores and the fierce competition environment will be difficult to change in a short time in high school. " In 2014, China's ministry of education began the biggest reform since Gaokao was reinstated in 1978. The English examination was changed from three-year once to twice with the highest score included in the final score. The impact of this change on English teachers in high schools remains to be further studied. The evaluation method based on score will inevitably influence the teachers' behavior. Although excellent schools enjoy the best quality resources, but at the same time, such schools also face significantly higher challenges and pressures in students entering higher education and going abroad than other schools. The evaluation of PLC from teachers in these schools is significantly lower than that of other teachers.

In the study of three schools' new PLC in Shanghai, it was found that insufficient cooperative learning time was one of the biggest problems teachers faced in participating in the PLC (Zhang *et al.*, 2017). Teachers from large schools were under more pressure in teaching and spent less time on professional development activities than those from small schools. In this study, only three schools with large, medium and small sizes were selected, and resources of these schools were not

considered in the investigation. Therefore, these results are different from this thesis. However, the researchers believe that in China's current population base, large-size schools are still the norm in most schools, especially in cities. Therefore, the influence of school size on PLC and TPD is weakened. The influence of school resources on the support of PLC and the interaction of TPD is more prominent. In Wang's study on two excellent schools in northeast of China, the interviewed teachers expressed that they were faced with a dilemma in the overall development of students and test scores under the background of the national college entrance examination (Wang, 2016).

At present, Changchun and PLCs in China are facing unprecedented opportunities and challenges in TPD activities. On the one hand, the constant development of science and technology and the internationalization of education provide technical and theoretical support for TPD. The in-depth research on the internationalization of education has provided the corresponding theoretical support for the TPD. The development of computers, networks and mobile terminals has broken down the time and space barriers of the TPD. In recent years, the provinces and cities in China have set up their own teacher education websites respectively. Using the website as the platform, the sections of famous teacher engineering, special training, scientific research exploration, achievements display and other projects build

a platform for teachers to communicate across time and space through virtual network, realizing the integration of teaching and research activities as well as network.

On the other hand, teachers in primary and secondary school of China are undergoing a renewal of education and age. The rapid development of China higher education in the past 20 years has greatly changed the educational structure of labor force and talents in China. In the past, teachers in primary and secondary schools most had junior college degrees. However, in recent years, more and more young teachers with master or doctor degrees have joined the teaching team. There are differences in age, teaching experience, skills and ideas between old teachers and new teachers. How to strike a balance between them, and design corresponding professional development activities that meet the needs of teachers, effectively improve the TPD is one of the challenges that PLC facing at present.

5.2.3 Professional development strategies in PLC

Based on the results of in-depth interviews with 27 teachers, this thesis summarizes the improvement strategies of TPD from four aspects as "Supportive and shared leadership", "Collective creativity", "Shared personal practice" and "Supportive conditions".

We believe that establishing a democratic and equal organizational

atmosphere is the primary task for the transformation of Chinese teachers' PLC. At present, the reform of "Supportive and shared leadership" of the PLC in schools depends on the construction of school culture and the cooperation and dialogue between school leaders and teachers. School leaders should be committed to building a spontaneous and cooperative learning culture, and creating an atmosphere of equal dialogue and cooperation among teachers. Members should gradually weaken the influence of administrative force, reduce the limitation of bureaucracy, and realize equal communication, dialogue and consultation.

"Teachers' culture in the education reform and TPD plays a central role, in the background of modern society, how to change the paradigm of educational reform and TPD from focusing on tangible and external factors to focusing on hidden and deep cultural factors in people's spiritual world is a important proposition of the times (Chen J., 2008)." The cooperative culture is based on teachers' teaching and research and openness, mutual trust and support among teachers. Cooperative culture is one of the effective elements to promote TPD and PLC. The PLC should cultivate teacher cooperation culture based on the following factors. First of all, the PLC and the school should be committed to the establishment of a sound and open research system. A sound and open research system means to break the restrictions between different

grades and advocate cross-grade cooperation. Secondly, we should construct the developmental evaluation system. With the introduction of competition mechanism, periodic performance appraisal has gradually become the lever for teachers to choose the mode of learning, working and interpersonal communication. Chinese schools have implemented the policy of rewarding the good and punishing the bad for a long time. It ignores the integrity of teachers' emotional and personality characteristics as a person (Shi, Chen, & Luo, 2007)." Under the guidance of this management system, not only there will be no real culture of teacher cooperation, but also the unhealthy competition among teachers and the suspicion, contradiction and opposition between teachers will be easily triggered due to its emphasis on results rather than process. At the same time, too much emphasis on quantification in the evaluation system is not only inconsistent with the professional nature of teachers, but also may lead teachers to alienated development, and the construction of teacher cooperative culture becomes a castle in the air.

The guidance of core personages is one of the key elements of an effective PLC, which is very important for the early growth of the PLC. At the beginning of the establishment of PLC, the members have some differences in personality, style, vision and planning. If not effectively integrated, it will have a negative impact on the

development of PLC. This requires core personages to have high quality, not only outstanding ability in the field of teaching, but also strong personal charm to create a democratic and equal learning environment for the PLC. "Chief in equality" effectively eliminates the influence of authority. In the learning process of the PLC, there is no master of authority, which makes members drop their psychological burden on each other, carry out sincere cooperation and jointly move towards the core area of the PLC. With the development of the PLC, more and more members will gather in the core area, and the responsibilities of the core personages will be dispersed in the initial stage, the core area of the PLC will be continuously expanded, which will become the best benign development form of the PLC.

Improving the supportive conditions of PLC is the guarantee of TPD. The participation of TPD depends on the corresponding supportive conditions. Time and money are one of the barriers the PLC and individual teachers facing. Setting up school-wide professional development activities with corresponding organizational guarantee is one of the effective strategies in this research. At present, the ministry of education has issued policies to promote the TPD activities. Under the support of policy, more and more schools and teachers attach importance to TPD.

Improving the activity design of cooperative learning is the key point to

promoting TPD. Creative activities that meet the needs of teachers can truly stimulate the enthusiasm of teachers to participate in professional development activities and internalize it into a real willingness to learn. If all the professional development activities are carried out only for the purpose of meeting the standards and policy requirements regardless of teachers' needs, professional development will eventually become a mere scrap of paper. Due to regional, cultural and school demographic differences, it is difficult for schools to develop activities common to all PLCs. Each school should base on its own needs and use its own resources to design professional development activities to meet the needs of the development of teachers, students and school.

Therefore, the PLC should open up the teaching and research process. Teachers of the same discipline always prepare lessons and discuss in an open atmosphere. They can communicate and learn from each other through various ways, such as listening other teachers' lessons, learning advanced teaching concepts to enrich them and meet their individual needs. It is worth noting that the learning organization emphasizes on the teacher group. Through sharing teachers' professional experience and equal dialogue and exchange, teachers' knowledge can be effectively managed. The communication between members should break many restrictions,

communicate with other teachers constantly, share information and knowledge, build their new knowledge structure, and obtain professional growth. TPD depends on professional learning. Improving the level of learning and sharing practice is one of the goals of TPD. Individual reflection on professional learning and teaching is the basis. The interest of active learning is stimulated, and then cooperative learning can be carried out efficiently in PLC. Cooperative learning can bring teachers' learning to a new level. Cooperative learning needs the PLC to ensure its members' willingness to share. Without interaction and sharing between members, the meaning of cooperative learning will be difficult to maintain. Wang's study found that "emotional bond, organizational trust and inclusive organizational culture are all significant factors influencing cooperative learning of PLC (Wang, 2015)." Leaders of the PLC should be committed to building a safe sharing environment, establishing a shared database of teaching and research results, and shaping a benign learning and growth mechanism and platform.

5.3 Countermeasures and Suggestions

5.3.1 Suggestions for schools

The Chinese government and ministry of education are working together to promote the improvement of schools and primary and secondary school teachers'

TPD. PLC as an effective strategy for teachers' post-service development should play a more important role. At present, the PLC in Chinese schools has laid a foundation for promoting the improvement of schools and TPD. In reality, the challenge for schools and teachers is how to improve the "Supportive and shared leadership" in the PLC. Establish an open and shared atmosphere and design activities that meet the needs of teachers at different stages of career development. Mobilize the enthusiasm of experienced teachers and promote the continuous and effective impact of PLC.

Schools should have the responsibility of building a PLC for teachers. Under the leadership of the high school principal and with the efforts of all teachers establish a democratic and cooperative learning environment. Optimize the overall allocation of school education resources; the facilities and cultural environment should reflect the idea of a learning school. With education and teaching as the center, it serves the TPD and the growth of students, which can meet the needs of education and teaching as well as reform and development to the greatest extent.

The principal should try his best to create a cooperative culture atmosphere and enhance the cooperative consciousness of teachers. Glazer *et al.* have shown that cooperative reflection in PLC can enhance teachers' professional identity. In daily teaching and work, cooperative reflection can promote teachers to combine learning

and teaching effectively. For example, in daily work, if teachers can cooperate with each other in the workplace to discuss and solve the problems they are faced with, such in-depth dialogue can help teachers to turn the problems they encounter at work into a learning opportunity. This process of interaction and sharing effectively integrates teaching and teachers' learning (Glaze, Abbott, & Harris, 2004). Leaders of the school must be able to create institutional arrangements for collaborative learning, including time, space, and resources.

The E school in this study is a typical case of successful transformation. Pushed by the three-party cooperation of U-G-S, the school has created a good environment for the TPD, including the pursuit of caring for students and cooperation culture. This strengthens the educational values of cooperation among teachers, and thus weakens the negative intervention force of competition in schools. Therefore, to further optimize the school's culture of caring for students and cooperative culture is more conducive to the development of teaching and research group.

The institutionalization of the PLC is conducive to creating a stable environment for TPD. "The emphasis on the necessity of the school as an organizational and administrative structure does not imply the revival of bureaucracy. Effective school is not only a loose structure entity, but also a tight structure (Wang,

2014)." Therefore, the key point of school system construction is to institutionalize cooperative learning by administrative and structural factors, so as to ensure that it will not become a loose organization due to the departure of key figures, and to help the PLC continue to exert its vitality.

While shaping the cooperative culture and common vision of the school and cultivating the PLC, the schools should broaden the external cooperation. Driven by the administrative force of education bureaus and teaching and research groups in various provinces and cities, the opportunities for cooperation of PLC are gradually increasing, such as the training of core teachers and other activities. This kind of activity makes the guidance of tutors; the linkage of teaching and research, the close connection of teachers' funded learning, forming a strong development support network, and leading the development of all schools and teachers in the region. This type of activity can avoid the closed and random training in a school, and also lays a solid foundation for realizing the integration and maximum utilization of educational resources.

In addition to the psychological support of cultural atmosphere, teacher cooperation also needs to build the corresponding cooperation platform of public knowledge space. The cooperation platform is mainly based on various resources in

the school. Resources can include time, expertise, space, equipment and other valuable things. Therefore, the school should fully integrate the existing human, material, financial, time, space and information resources, explore new professional cooperation platform, provide diversified guarantee for teacher cooperation, and provide convenience for teachers to seek professional support conditions outside the school. Expand information transmission and communication; create a harmonious interpersonal atmosphere, so that teachers get full opportunities to participate in cooperation.

Firstly, the knowledge base of the PLC members should be established. Construct public knowledge space as a micro knowledge base. Second, establish an area for sharing resources. Discipline leaders should actively build an area for sharing resources. The area is rich in content, including course materials, relevant knowledge base, original database, etc., and teachers can also connect their accumulated works related to research and study tasks, personal home page, reflection diary, educational blog diary, etc., to the website. Then PLC can continue to communicate effectively. This includes the BBS, chat rooms, email, BBS, and collaborative repository, including virtual whiteboard, Shared applications, personal home page space, tracking evaluation tools, electronic folder, make the teacher achieve high level thinking and

deep understanding in the communication, collaboration and the construction of social knowledge. The area can provide abundant resources for various activities of the PLC. All kinds of materials and solutions to common problems will be shared in the resource area. Meanwhile, all kinds of tools will be provided to facilitate each member's learning and communication needs. In addition, the shared collaboration area is also a platform to facilitate collaboration and communication between members. It can include information bulletin board, BBS, chat room, etc. Each member has the right to update information for real-time and non-real-time interaction.

5.3.2 Suggestions for the PLC

The purpose of the PLC is to realize the professional growth and development of teachers. Teachers should be organized to carry out collective learning and research, so as to improve their ability to collect, manage and apply knowledge and optimize their knowledge structure. Teachers in teaching and research organizations communicate with each other, to gain new knowledge, update their ideas, each member through the self-criticism and criticism others at the same time to correct their own shortcomings, continuously develop the potential of individual teacher, full realization of cooperation study organization goals, not only promote the

professional development of teachers, also indirectly promote the development of the development of the students and schools.

Through the interviews, the researchers found that the “Supportive and shared leadership” of the new type of the PLC was quite different from that of the traditional PLC. The new PLC has a higher degree of de-administration. It gives more power to teachers who participates in the activity and provides them with the opportunity to express their own opinions. Teachers can have professional dialogues on an equal and free basis. Free cooperation derived from this is more effective than the traditional administrative cooperation of PLC. In addition, trust and respect in the PLC is the cornerstone of its development. On this basis, members should be recognized and rewarded to form a corresponding incentive mechanism. Recognition and honor based on trust and respect can increase the confidence of members of the PLC and contribute to mutual improvement. The sharing and interaction in the PLC can make teachers improve their professional dignity and self-confidence, to stimulate teachers promote professional consciousness, promote team spirit, break through the teachers' professional isolation, effectively arouse the whole team for development, and teachers can optimize the structure of their own professional knowledge, professional growth and development.

After a survey of 1,611 teachers in 32 high schools in China, Song found that "teachers' PLC with sharing and cooperation as the development model provides teachers with more professional autonomy and possibilities for TPD (Song, 2012)." If teachers can freely express their ideas and share their experiences in the PLC, individual teachers can gain more professional trust from colleagues through this activity. Sharing activities based on trust further enhance individual teachers' sense of responsibility to the organization. The sense of trust and responsibility based on the organization can help the PLC to establish a benign sharing and evaluation mechanism. And every teacher who participates in this activity can also gain corresponding professional growth.

Song (2011) believes that "teachers' PLC should establish some routine, convention, common understanding, rules for dispute settlement and rules for communication management, including rules for respect and trust, rules for sharing and rules for understanding. Respect rules require that different voices be allowed in the PLC, so that each member can feel safe, protect and tolerate "deviants" when expressing their ideas and opinions, and respect their differences. Every teacher in the PLC has his own specialty, whether it is instrumental or resource. Under this premise, members of the PLC should share their knowledge and skills, integrate individual

knowledge into collective knowledge of the PLC, and obtain knowledge beneficial to their own development from other members of the PLC. At the same time, individuals should also improve their own judgment and discrimination, when they encounter difficulties, they should know who in the PLC could help. Finally, members of the PLC need to be emotionally integrated and understand each other in order to achieve their common vision and goals. Understanding and empathy not only include the experience of members' psychological state and empathy to achieve emotional consistency, but also include the thought, emotion, opinion and attitude of members to achieve deep spiritual communication and accommodation.

Most members of the PLC are teachers with working experience. Compared with pre-service teachers, the learning of experienced teachers has their distinctive characteristics. They have personal experience in teaching, which needs to be activated in professional learning and integrated into new learning activities. They pay more attention to solve problem and do not like abstract, profound and irrelevant theoretical knowledge. Teacher is a profession with strong practicality. A large part of teacher's knowledge is silent, physical, context-dependent and distributed in interpersonal interaction and relationships. Teachers' knowledge can be activated, understood and reconstructed only in real problem situations.

Therefore, the contents which teachers learn needs to be closely related to the difficulties they encounter in daily teaching. The content of professional learning must be integrated, and the basic theory, skills, professional attitude and other qualities cannot be divided into different parts, which should be integrated together to achieve the transformation of teacher quality. In terms of methods, different from the knowledge infusion in centralized training, the PLC provides teachers with scaffolding help in the workplace. In the equipment support, because teaching often involves a certain situation, the importance of modern multimedia is highlighted here. PLCs can use cameras and other auxiliary tools to shoot scenes in daily teaching and take them as cases for discussion to help teachers experience normal teaching, so as to generate more knowledge corresponding to the actual situation.

The network can provide a variety of learning methods, a variety of learning resources, and a real-time dialogue with more than one person, which can break through the limitation of "regionalism" and truly realize the "de-regionalism" of the PLC. Therefore, the network can provide learners with multiple paths to enter the PLC. The openness of the Internet creates opportunities for newbies to participate in the PLC. The learning in the PLC is a process of meaning negotiation; knowledge is constructed through dialogue between members. Therefore, the communication tools

provided by the network are embedded into the activities of the PLC, which is conducive to the formation of dialogue and cooperation among the members. At the same time, through the network, members can participate in different PLCs and activities. This can not only enrich individual knowledge, but also bring these different experiences into the PLC, thus enriching the connotation of the PLC.

5.3.3 Suggestions for teachers

In the era of knowledge economy, the pace of information and knowledge update is accelerating. Teachers should re-examine their identity, take a positive attitude towards the special teaching environment, constantly reflect on their own practical activities, and develop the idea of lifelong learning. Teachers should train themselves to accept new things and ideas with a healthy and open mind, pay attention to the latest educational trends at home and abroad, and then apply them to their own learning and work. In addition, teachers should make use of the progress of network media technology to open up learning channels for themselves. Such as writing a reflection log, participating in the discussion of topics related to teacher's promotion, etc. Teachers should cultivate their own positive and open mind, actively participate in professional development activities, and try to share their teaching and learning experience in the activities.

PLC changes the mode of TPD from the traditional individual learning process to cooperative learning. The change of sharing practice requires teachers to adjust their behaviors and attitudes accordingly. The cooperative culture is the most basic of the PLC. The function of the PLC is to organize the individual teachers' knowledge, skills and tendencies into a social resource. However, how to utilize, develop and expand resources in the PLC depends on individual initiative of teachers (Wang X. F., 2014).

Thus, "individual teachers also need to have a Transformative learning, and have new actions after reassessment of the assumptions behind their beliefs (Chen X. M., 2013)." This kind of learning can help teachers to adjust their action strategies properly after understanding the consequences of their actions, and to rethink their values and beliefs. In today's complex and changing society, it is difficult to superimpose personal ability in a cumulative way. It needs to be reconstructed by constantly adjusting oneself to new problem situations. In the process of learning, teachers need to constantly "go to learn" and "re-learn". When teachers find themselves even repeatedly practice cannot solve the problem, apart from the help from the PLC, individual teachers should also learn to change their thinking patterns and try some new methods and skills.

One of the goals of a high-quality PLC is to train teachers to obtain professional development and promote their socialization. Teachers should learn to reflect on their teaching work and form a critical awareness. They should have a deep understanding of teaching tasks and topics, and be able to use their knowledge and skills with other members of the PLC to share them as resources of the PLC, so as to solve problems cooperatively and enhance understanding.

In this study, the pressure brought by college entrance examination is one of the factors that hinder teachers' participation in the PLC. The college entrance examination is a double-edged sword, which should be transformed into a resource for teachers to improve their professional learning. Teachers should enrich their curriculum resource base with the college entrance examination questions. Each year, there are many questions in the examination in different provinces with the information of the times, as well as good questions, new questions, and the questions need using new ways to solve. By studying at these questions, they can have a profound understanding, enrich their own subject content, so as to prepare for high-quality teaching.

The development of network provides a new way for teachers' independent learning. The abundant resources and advanced tools in the network environment

provide a reliable material guarantee for TPD. Independent learning will be an effective mode of TPD. In the model of independent learning, teachers have complete autonomy in learning, free learning time and space. They can reasonably arrange the time and place for learning and teaching to avoid conflicts between them. In terms of learning activities, teachers can independently customize learning objectives and plans, select learning contents, design learning plans, monitor the learning process and evaluate the learning results. According to the evaluation and feedback, reflect on the learning process, learning methods and learning strategies to improve cognitive ability. In terms of resource application, teachers can independently search, process and manage information resources, and explore theoretical and practical problems with information resources, so as to increase knowledge and improve skills in the process of solving problems. In the network environment, teachers can independently carry out various forms of learning activities, such as problem-based learning, inquiry-based learning and resource-based learning, to promote the TPD. Teachers have accumulated rich learning experience, methods and strategies in independent learning, which is of great significance for guiding and assisting students to carry out independent learning activities in the future and promoting the development of students' cognitive ability.

In order to change the role of teacher from a simple knowledge impart to a promoter of students' learning and development, teachers themselves must be researchers of positive and effective education. Teachers should strive to establish themselves as a researcher of educational action. Summarizing the relevant research results at home and abroad, this study proposes a basic framework of teachers' action research. First, find the problem. This is the starting point of action research. Teachers pay attention to specific problems in education and collect relevant materials from courses, students and teachers themselves. Second, analyze the problem. By analyzing the collected data and examining their own thoughts and behaviors, teachers define the problems and determine the scope of the problems, so as to have a clear understanding of the nature of the problems. Third, establish assumptions. After the problem is identified, teachers begin to search for confidence similar to or related to the current problem in the existing knowledge structure, so as to establish a solution to the problem. This information-seeking activity is self-directed. The results can help teachers develop new and creative solutions. Fourth, verify the hypothesis. After considering the possible effects of each action plan, teachers start to try out a solution, and continue to collect all kinds of data or evidence after the trial to test the hypothesis and improve the current situation. In the inspection process, teachers will

encounter new problems and experience. When this action process is observed and analyzed again, a new round of action research cycle will begin.

5.3.4 Suggestions for future research

This study investigates the development and influencing factors of the English teachers' PLC in Chinese high school, as well as the teachers' experience and barrier therein, and makes a reasonable construction. But that doesn't mean the study is over. It's just a new starting point for follow-up research. There are still many thoughts on the PLC, which have not been implemented in this study. In the follow-up study, the following aspects can also be investigated.

Willingness to share knowledge is a key point of effective cooperative learning. In this survey, teachers hold a conservative attitude. Teacher B2 said, " The behavior of sharing knowledge is hard to say. If I find a good teaching method or an improvement strategy, of course it will be difficult for me to share it with my colleagues, because if everybody knows, how can I improve the scores of my class?" In the traditional PLCs established by schools, teachers are less willing to share knowledge due to uncertain safety factors. As an unofficial and authoritative PLC, the teacher studio provides a safe environment for teachers to share. Teachers' willingness to share has improved. However, for other PLCs, knowledge sharing is still a subject

worth studying.

According to Zhou's (2006) research on knowledge sharing among Chinese teachers, the level of knowledge sharing among Chinese primary and secondary school teachers is relatively low, and the factors hindering knowledge sharing are mainly divided into the following aspects: In terms of individual factors, teachers with stronger competitive personality have lower willingness to share knowledge. In the consideration of knowledge factors, unique teaching experience and teaching cases are teachers' implicit knowledge, which is the "magic weapon" for teachers to improve students' academic performance and increase teaching efficiency. Due to consider organizational factors such as promotion and performance bonus, teachers are less willing to share knowledge. In the organizational factors, the hierarchical structure of bureaucracy has not formed a benign atmosphere of knowledge sharing and cooperation among teachers. Moreover, the system of "elimination from last place" leads most teachers to take a silent attitude towards tacit teaching knowledge. In terms of cultural factors, the relationship-based interpersonal communication in Chinese social culture leads most teachers to prefer knowledge sharing among individuals rather than within groups. Due to time and technology constraints, teachers lack a platform for in-depth sharing and discussion, and heavy work also

weakens the enthusiasm of some teachers to share (Zhou, 2006).

According to Wang's (2014) research, the administrative, structural and institutional factors are promoting factors for the establishment of the PLC. Such a "contrived collegiality" can create a stable environment for the development of PLC. The transition from traditional Chinese administrative organization-oriented one to a PLC of "institutionalization" and "sustainability" is beneficial to dissolve strong personal relationships, foster a culture of cooperation between members, and institutionalize knowledge sharing (Wang, 2014).

In the research of other scholars, organizational trust (Chen *et al.*, 2016) and knowledge sharing (Chiu, Hsu, & Wang, 2006; Hou, Sung, & Chang, 2009) were found to be effective intermediate variables of "Supportive and shared leadership" and "Shared personal practice" through statistical analysis. They play a good role in promoting the development of an effective PLC. The relationship between traditional and new PLC, network virtual PLC and its organizational trust, knowledge sharing behavior and sharing personal practice can be taken as the starting point for further research.

In the professional standards for middle school teachers promulgated by the ministry of education in 2012, teachers are required to "have the spirit of teamwork,

actively carry out collaboration and communication", and to "cooperate and communicate with colleagues, share experience and resources, and achieve common development". Therefore, cooperation and sharing is one of the basic professional abilities of teachers.

The traditional PLC represented by teaching and research group, grade group and collective lesson preparation group is the most basic organization in primary and secondary schools. This kind of PLC was originally set up as an administrative organization, which does not have the characteristics of a learning organization. During the years of development, the teaching and research group and the collective lesson preparation group have taken on the task of improving teachers' teaching abilities. However, how to promote TPD is still one of the challenges the traditional PLC facing. Moreover, how to promote the cooperation in the PLC among teachers, between teachers and schools, between schools and society, is one of the topics that should be considered in the reform of primary and secondary school system.

5.4 Research Contributions

Under the promotion of scholars, establishing the PLC has become one of the goals of all schools. However, how to construct an effective PLC and maintain the

continuous effect of PLC on the TPD is still a hot topic in the world. In the current studies, the development and improvement of PLC are discussed in the context of European and American schools, while the traditional Asian schools with Confucian culture and bureaucratic management system are rarely studied (Hairon & Dimmock, 2012; Zhang & Pang, 2016). In Chinese schools, since the 1950s, the government has required all primary and secondary schools to establish an organization with teaching and research group as the grassroots teaching unit, which is similar to the PLC in terms of organizational form, activity content and objectives (Shan, 2014).

PLC is a concept created by western scholars, which is based on the theory of learning organization. This concept is different from the teaching and research group and collective lesson preparation group in China. The teaching and research group and other teachers' organizations in Chinese schools have gradually acquired the connotation of PLC in the school reform and development in these years. Compared with other Chinese scholars, based on the questionnaire of western scholars on the connotation of PLC, this study firstly investigated Chinese English teachers in the form of questionnaire. Teachers' understanding of the concept of PLC was extensively investigated. Then, SPSS is used to analyze the factors affecting the development of PLC on this basis.

Firstly, this study enriches the Chinese cases in the field of teacher education. The four variables of the PLC are still valid in the Chinese context. This study confirms that "Supportive and shared leadership", "Shared values and vision", "Collective creativity", "Shared personal practice" have a significant positive impact on TPD. Among the variables in the questionnaire survey, based on the research literature at home and abroad, we classify the school size by large, medium and small, as one of the factors affecting the evaluation of PLC and TPD. The survey results show that this factor has not been verified, and the results of the interview show that the factor of school size has less impact on TPD than school reputation and resource. The researchers believe that, on the one hand, the majority of teachers in this study are from large-size schools while too few teachers in small-size schools, may have an impact on the survey results. On the other hand, in China's current environment, large-size schools are still dominant in cities, and school size has a homogenous influence on schools, teachers and students. In this study, compared with the factors of school size, the changes in resources caused by the differences in school reputation have a significant impact on the TPD and the construction of PLC.

Secondly, most of the previous studies on teachers' PLCs focus on a single category of PLCs. In this study, researchers conducted a questionnaire survey on the

existing number and participation frequency of three different types of PLCs. Therefore, this study is relatively more extensive in the category of PLC, and has a more accurate grasp of the current situation of teachers' PLCs in Chinese high school. In order to have an in-depth understanding of teachers' experience in the PLC, the researchers interviewed 27 teachers of nine Chinese high schools from the perspective of teachers. The opportunities and barriers for English teachers' professional development in different PLCs are presented in this dissertation. Through interviews, we find that the traditional PLC, as a long-existing grassroots administrative organization, is still one of the main forms to help teachers achieve professional development. In order to better play its role, Chinese schools are investigating strategies to improve teaching and research groups, collective lesson preparation groups and grade groups. The new type of PLCs such as teacher studio and regional PLC has stronger learning purpose and is the most professional type in all PLCs. It provides stronger guidance for members' professional development. Network PLC is only used as a means of communication in some schools, and its powerful learning resources and learning effectiveness are still to be developed. Some schools with advanced ideas have embedded it into teachers' daily teaching and students' learning as a learning tool. In the context of China's existing network and teacher literacy, the

extent and breadth of the application of educational technology in teachers' PLC need to be assisted by the new generation of post-80s teachers.

Finally, we summed up the feasible suggestions of improving TPD from the needs of teachers. This research investigates how teachers should utilize resources in the PLC to improve their professional development. By sorting out the interview scripts of 27 teachers, we summarized the most practical TPD strategies of teachers.

5.5 Research Limitations

In this survey, the main questionnaire is still based on the original questionnaire, and the five variables have not been revised. After the translation, only the questions that can be explained are retained. The variable "supportive conditions", which is extremely important for the development of PLC, has been deleted due to there are too few explanations for it. Even though further research has been done in subsequent interviews. However, due to the small sample size, it is still difficult to present the complete situation of the whole city.

In addition, the variable "Shared values and vision" of the PLC has not received positive feedback in this survey, since most teachers have a low understanding of this concept and regard it as the school's goal, school motto and other concepts. As a theoretical concept, only two teacher studio founders who have

served as school leaders for a long time mentioned the positive role of this variable in constructing an effective PLC. As the founder of teacher studio, teacher A1 told the researcher about the confusion she faced. "I keep asking myself from the beginning, why do I want to do this? What is our goal? As a national famous teacher, my fame and gain are not important any more. However, as a teacher, not only for students, but also for the school, thinking for peers. At that time, I thought, for better teaching, serving the school, discipline development, is probably the original intention of the studio. Therefore, in the future, we will try to follow this principle when design activities. How to construct the “Shared values and vision” in the practical operation level and internalize it into the members' own ideas and put it into the daily study and work practice depends on the mutual promotion of teachers' own theoretical level and practical knowledge. Due to the limitations of the cultural differences between China and the western country, it is difficult to further explain the western concept of "Shared values and vision" in which everyone participates in decision-making in the survey, so the analysis and interpretation of this variable remain at the surface level.

Finally, due to the limited ability of researchers, it is difficult to sort out and summarize a large number of interview documents. We just initially restore and summary the statements of the interviewees. However, we have not yet achieved a

comprehensive interpretation for the transformation pressure of teachers' PLC under the background of the times, for young teachers' longing, confusion and hesitation about teachers' professional, for the future development of teachers' education in China.

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APPENDICES

Appendix 1

Draft questionnaire of English Teachers' Assessment of Professional Learning Community and Professional Development in the Chinese High School

The purpose of this questionnaire is to investigate opportunities and barriers, and proposed strategies for effective professional Learning community for Chinese high school. There is no right or wrong answer. We promise we will only use it for my research. Thanks for your participation.

First Section: Background information

1.Age ____21-25 ____26-30 ____31-40
____41-50 ____51-60 ____60+

2.Gender ____Female ____Male

3.Years of teaching experience: ____1-5 ____6-10 ____11-15 ____more than 15 years

4.Highest Degree earned: ____Ph.D./Ed.D. ____Master's ____B.A ___Junior college

5.Are you one of the leaders of your school or teaching subject? ____Yes ____No

6.Have you got your degree from the Normal School? ____Yes ____No

7.What credential do you have for English language?
____TEM8 ____TEM6 ____IELTS ____TOEFL ____None

8. What is the major of your degree?
____English (or major related to English language)
____Pedagogical (or major related to education)
____Others

9. How about the resources of your school?
____Excellent ____Average ____Poor

10. What is the size of your school?
___Small (<18 academic classes) __Middle (18-36 academic classes) __ Large (>36 academic classes)

11. Which types of PLCs exist in your school that mentioned below? (multi-choices)
A. Teaching Research Groups
B. Collective Lesson Preparation Groups
C. Grade Groups
D. Teacher Studio
E. Regional PLC
F. Subject-based QQ/Wechat Group
G. University-based

12. Which types of PLCs are you actively involve that mentioned below? (multi-choices)
A. Teaching Research Groups
B. Collective Lesson Preparation Groups
C. Grade Groups
D. Teacher Studio

E. Regional PLC
F. Subject-based QQ/Wechat Group
G. University-based

Second Section: Five Point Likert investigation

The second section of this survey will inquire your assessments and opinions of professional learning communities and your professional development via the professional learning communities' activities. Please indicate the extent to which you agree with the following statements:

Scale: 1 = Strongly Disagree 2 = Disagree 3 =partly agree 4= Agree 5 = Strongly Agree

	Content	Strongly Disagree				Strongly Agree
		1	2	3	4	5
Supportive and Shared Leadership						
1.	Teachers are consistently involved in discussing and making decisions about most teaching and learning issues.					
2.	The leader of PLCs incorporates advice from teachers to make decisions.					
3.	The leader participated democratically with teachers sharing power and authority.					
4.	The leader of PLCs is proactive and addresses areas where support is needed.					
5.	The leader of PLCs shared responsibility and rewards for innovative actions.					
6.	Opportunities are provided for teachers to initiate change.					
7.	Decision-making takes place through committees and communication across grade and subject areas.					
8.	Teachers have accessibility to key information.					
Shared Values and Vision						
9.	A collaborative process exists for developing a shared sense of values among teachers.					
10.	Shared values support norms of behavior that guide decisions about teaching and learning.					
11.	Teachers in my school share visions for school improvement that have an undeviating focus on student learning.					
12.	Decisions are made in alignment with the school's values and vision.					
13.	School goals focus on student learning beyond test scores and grades.					
14.	Data are used to prioritize action to reach a shared value and vision.					
Collective Creativity						
15.	Collegial relationships exist among teachers that reflect commitment to their professional development.					

16.	Teachers plan and work together to search for solutions to address their teaching needs.
17.	Teachers learn together and apply new knowledge to solve problems.
18.	Teachers collaboratively analyze student work to improve teaching and learning.
19.	Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.
20.	A variety of opportunities and structures exist for collective learning through open dialogue.
21.	Professional development focuses on teaching and learning.
22.	Teachers are committed to programs that enhance learning.
23.	Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.
Shared Personal Practice	
24.	Opportunities exist for teachers to observe peers and offer encouragement.
25.	Teachers provide feedback to peers related to instructional practices.
26.	Teachers informally share ideas and suggestions for improving student learning.
27.	Teachers collaboratively review student work to share and improve instructional practices.
28.	Opportunities exist for coaching and mentoring.
29.	Individuals and teams have the opportunity to apply learning and share the results of their practices.
30.	Teachers regularly share student work to guide overall teachers' learning.
Supportive Conditions	
31.	Caring relationships exist among teachers and students that are built on trust and respect.

32.	Outstanding achievement is recognized and celebrated regularly in my school.
33.	Relationships among teachers support honest and respectful examination of data to enhance teaching and learning.
34.	School provides enough time and money for the professional learning activities in PLCs.
35.	Parents support teachers participate in the activities of PLCs.
Learning outcomes via PLC	
36.	My linguistic knowledge about English had improved via PLCs.
37.	My pedagogical knowledge had improved via PLCs.
38.	My knowledge of strategies, techniques and tools to create and sustain a learning environment/community, and the ability to use them effectively had improved via PLCs.
39.	My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs.
40.	My knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs.

Appendix 2

Questionnaire of English Teachers' Assessment of Professional Learning Community and Professional Development in the Chinese High School

The purpose of this questionnaire is to investigate opportunities and barriers, and proposed strategies for effective professional Learning community for Chinese high school. There is no right or wrong answer. We promise we will only use it for my research. Thanks for your participation.

First Section: Background information

1.Age ____21-25 ____26-30 ____31-40
____41-50 ____51-60 ____60+

2.Gender ____Female ____Male

3.Years of teaching experience: ____1-5 ____6-10 ____11-15 ____more than 15 years

4.Highest Degree earned: ____Ph.D./Ed.D. ____Master's ____B.A ____Junior college

5.Are you one of the leaders of your school or teaching subject? ____Yes ____No

6.Have you got your degree from the Normal School? ____Yes ____No

7.What credential do you have for English language?
____TEM8 ____TEM4 ____IELTS ____TOEFL ____None

8. What is the major of your degree?
____English (or major related to English language)
____Pedagogical (or major related to education)
____Others

9. How about the resources of your school?
____Excellent ____Average ____Poor

10. What is the size of your school?
___Small (<18 academic classes) __Middle (18-36 academic classes) __ Large (>36 academic classes)

11. Which types of PLCs exist in your school that mentioned below? (multi-choices)
A. Teaching Research Groups
B. Collective Lesson Preparation Groups
C. Grade Groups
D. Teacher Studio
E. Regional PLC
F. Subject-based QQ/Wechat Group
G. University-based

12. Which types of PLCs are you actively involve that mentioned below? (multi-choices)
A. Teaching Research Groups
B. Collective Lesson Preparation Groups
C. Grade Groups
D. Teacher Studio

E. Regional PLC
F. Subject-based QQ/Wechat Group
G. University-based

Second Section: Five Point Likert investigation

The second section of this survey will inquire your assessments and opinions of professional learning communities and your professional development via the professional learning communities' activities. Please indicate the extent to which you agree with the following statements:

Scale: 1 = Strongly Disagree 2 = Disagree 3 =partly agree 4= Agree 5 = Strongly Agree

	Content	Strongly Disagree				Strongly Agree
		1	2	3	4	5
Supportive and Shared Leadership						
1.	Teachers are consistently involved in discussing and making decisions about most teaching and learning issues.					
2.	The leader of PLCs incorporates advice from teachers to make decisions.					
3.	The leader participated democratically with teachers sharing power and authority.					
4.	The leader of PLCs is proactive and addresses areas where support is needed.					
5.	The leader of PLCs shared responsibility and rewards for innovative actions.					
6.	Opportunities are provided for teachers to initiate change.					
7.	Decision-making takes place through committees and communication across grade and subject areas.					
8.	Teachers have accessibility to key information.					
Shared Values and Vision						
9.	A collaborative process exists for developing a shared sense of values among teachers.					
10.	Shared values support norms of behavior that guide decisions about teaching and learning.					

11.	Teachers share visions for school improvement that have an undeviating focus on student learning.
Collective Creativity	
12.	Collegial relationships exist among teachers that reflect commitment to their professional development.
13.	Teachers plan and work together to search for solutions to address their teaching needs.
14.	Teachers learn together and apply new knowledge to solve problems.
15.	Teachers collaboratively analyze student work to improve teaching and learning.
16.	Teachers collaboratively analyze multiple sources of data to assess the effectiveness of instructional practices.
17.	A variety of opportunities and structures exist for collective learning through open dialogue.
18.	Professional development focuses on teaching and learning.
19.	Teachers are committed to programs that enhance learning.
20.	Teachers engage in dialogue that reflects a respect for diverse ideas that lead to continued inquiry.
Shared Personal Practice	
21.	Opportunities exist for teachers to observe peers and offer encouragement.
22.	Teachers provide feedback to peers related to instructional practices.
23.	Teachers informally share ideas and suggestions for improving student learning.
24.	Opportunities exist for coaching and mentoring.
25.	Individuals and teams have the opportunity to apply learning and share the results of their practices.
Learning outcomes via PLC	

26.	My linguistic knowledge about English had improved via PLCs.
27.	My pedagogical knowledge had improved via PLCs.
28.	My knowledge of strategies, techniques and tools to create and sustain a learning environment/community, and the ability to use them effectively had improved via PLCs.
29.	My knowledge of student context and a disposition to find out more about students, their families and their schools had improved via PLCs.
30.	My knowledge and attitudes that support political and social justice, as social realities make teachers very important agents of social change had improved via PLCs.

Appendix 3

中国高中英语教师专业学习共同体与专业发展评价问卷

本问卷的目的是调查中国高中有效专业学习共同体的机会、障碍，并提出适当的策略。答案没有对错之分。我们保证只用于研究而用。感谢您的参与。

第一部分：背景信息

1.年龄 ____21-25 ____26-30 ____31-40
____41-50 ____51-60 ____60+

2.性别 ____女 ____男

3.教龄: ____1-5 ____6-10 ____11-15 ____15 年以上

4.获得的最高学位: ____博士/教育学博士 ____硕士 ____本科

5.请问您是学校或教学组的领导者之一吗? ____是 ____否

6.请问您毕业于师范大学吗? ____是 ____否

7.请问您具备什么英语证书?
____专业八级 ____专业四级 ____雅思 ____托福 ____无

8.请问您毕业于哪个专业?
____英语 (或英语相关专业)
____教育学(或教育学相关专业)
____其他

9.请问您所在学校的资源如何?
____优秀 ____一般 ____较差

10.请问您所在学校的规模如何?
_____小(小于 18 个教学班) _____中(18-36 个教学班) _____大 (36 个教学班以上)

11.请问您所在学校有哪些专业学习共同体? (多选题)
A. 教研组
B. 备课组
C. 年级组
D. 教师工作室
E. 区域性专业学习共同体
F. 以学科为基础的 QQ/微信群
G. 以大学为基础的专业学习共同体

12.请问您经常参加哪些专业学习共同体的活动? (多选题)
A. 教研组
B. 备课组
C. 年级组
D. 教师工作室
E. 区域性专业学习共同体
F. 以学科为基础的 QQ/微信群

G. 以大学为基础的专业学习共同体

第二部分：李克特五点量表调查

本调查的第二部分将通过专业学习共同体的活动，询问您对专业学习共同体和您的专业发展的评价及意见。请说明你在多大程度上同意以下的陈述:

评价: 1 = 非常不同意 2 = 不同意 3 =部分同意 4= 同意 5 = 非常同意

内容	非常不同意 1	2	3	4	非常同意 5
支持与共享的领导					
1. 教师们始终参与讨论和决定大多数教学和学习的问题。					
2. 专业学习共同体的领导者会通过采纳我们的建议来做决定。					
3. 领导与教师们能平等民主的参与活动，分享权力及权威。					
4. 专业学习共同体的领导会积极主动的帮助我解决问题。					
5. 专业学习共同体的领导能帮助我分担责任，并对我的创新行为给予奖励。					
6. 专业学习共同体能够提供给我们改进自身能力的机会。					
7. 专业学习共同体中的决策通过委员会进行，并进行跨年级、跨学科的交流沟通。					
8. 教师们可以获得关键的信息。					
共享的价值观和愿景					
9. 为了在教师之间培养一种共同的价值观，专业学习共同体中存在着协作的过程。					
10. 教师们共同的价值观能够支持和指导教学决策的行为规范。					
11. 教师们分享对学校改善的愿景，并始终关注学生的学习。					
集体的创造力					
12. 教师之间存在着反映能够保证其专业发展的校际关系。					
13. 教师们计划并共同努力寻找解决方案来满足他们的教学需求。					
14. 教师们一起学习，并运用新知识来解决问题。					
15. 教师一起合作分析学生的学习情况，以提高教学能力。					
16. 教师一起合作分析多种数据资料，以评估教学实践的有效性。					

17.	专业学习共同体中存在各种各样的通过开放的对话来进行集体学习的机会。
18.	教师的专业发展应注重教与学。
19.	教师们致力于能够促进学习的项目。
20.	教师们在对话中能够尊重各种思想，从而导致不断的探究。
共享个人实践	
21.	教师们有机会观察学习同伴，并给予鼓励。
22.	教师能够向同伴提供与教学实践相关的反馈。
23.	教师们会非正式地分享提高学生学习能力的想法和建议。
24.	专业学习共同体中存在培训和指导我们的机会。
25.	我们个人和团队有机会应用学习的知识并分享他们实践的结果。
通过专业学习共同体获得的学习成果	
26.	通过专业学习共同体，我的英语语言知识得到了提高。
27.	通过专业学习共同体，我的教学知识得到了提高。
28.	我对创建和维持学习环境/共同体的策略、技术和工具的知识及如何通过专业共同体有效使用它们的能力都得到了提高。
29.	我增强了对学生背景的了解，并通过专业学习共同体了解了更多学生的及他们的家庭和学校的信息。
30.	通过专业学习共同体改善了我支持政治和社会公正的知识和态度，使得教师在社会现实中成为社会变革的重要推动者。

Appendix 4

Interviews of Opportunities and Barriers, and Proposed Strategies for Effective Professional Learning Community for Chinese High School

Introduction: The purpose of this interview is to examine opportunities, barriers and strategies of teachers related to the professional learning community (PLC) within their learning environment and its impact on instructional practices and student achievement. Since you are a member of the school's professional learning community, I'm inviting you to participate in a 30-40 minutes' interview session. Your participation is voluntary and greatly appreciated. You will be assigned a participant ID number to use throughout the study, instead of your name.

Name of Researcher: _____

Date: _____ Time: _____

Participant ID: _____

Interviews

Please answer the following questions based on your perceptions, experience, and knowledge. All questions relate to the PLCs that you have participated in the last academic year.

Interview guidance/questions

For all teachers
1.Have you heard the professional learning communities before?
2.Which types of PLCs have you participated in the last academic year?
3.In your opinion, which type of PLC offers you the actual help in your teaching or learning?
4.According to your experiences, what are the differences between the three types of PLCs?
5.Which kind of tactics do you prefer to use for improving your English language knowledge?
6.What kind of strategies do you prefer to use for improving your teaching skills?
7.Have you often shared knowledge or skills in the PLCs? Why not?
8.If there are more strangers in the PLCs, will you share more experiences?
9.Do you prefer continuing professional development activities or single activities? Why?
10.We plan to hold professional development activities that concentrate on the English language knowledge, teaching skills, classroom management, new teaching technical. Which one or two do prefer to join in, why?
11. Were there any barriers for you to use information of PLCs in improving your teaching and learning in your work?
12. What is your opinion of "supportive and shared leadership" and "share values and vision"?

For the leader of PLC
13. What kind of activities often be held in your PLC? How are these activities come out?
14. What is the target of your Teacher Studio? What strategies have you used to achieve this goal?

15.Would you like to share any other information related to PLCs that you participated in before we conclude this interview?