THE RELATIONSHIP BETWEEN TEACHERS' PERCEPTIONS TOWARDS PROFESSIONAL LEARNING COMMUNITIES AND THEIR COLLECTIVE EFFICACY AT DEQIN MIDDLE SCHOOL IN YUNNAN PROVINCE, CHINA

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Abstract: The main purpose of this study was to determine the relationship between teachers' perceptions towards professional learning communities and their collective efficacy in Deqin Middle school. The study firstly evaluated teachers' perceptions of the professional learning communities, examined their collective efficacy, and finally determined the relationship between the professional learning community and collective efficacy. This study used a questionnaire to determine the research objectives, adopted the Professional Learning Communities Assessment-Revised (PLCA-R) created by (Olivier, 2010) and the Collective Efficacy Scale (short form) by Goddard, (2002). The study surveyed 112 full-time teachers in Deqin Middle School in the 2020 academic year. The researchers used the Mean and Standard Deviation to analyze teachers' perceptions of professional learning communities and their level of collective efficacy. The Pearson Product Moment Correlation Coefficient is used to test the relationship between two variables. The findings indicated that teachers' perceptions of the professional learning community and their collective efficacy were at a high level. Results of the Pearson correlation indicated that there was a significant relationship between teachers' perceptions towards professional learning community and their collective efficacy, ($r(105) = .583$, $p = .000$).

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Introduction

School improvement is diverse and extensive. In 1998, DuFord and Eaker proposed that school improvement should reflect the Professional Learning Communities (PLCs) so that schools can achieve real reform. The purpose of PLCs is to simulate the construction of a learner-centered educational environment that brings outstanding results to teachers and administrators and helps students improve their achievements (Hord, 2009). PLCs are a means to an end, and more and more schools use it to improve their work.

PLCs provide support for improving teachers' effectiveness, bring an excellent outcome to the student (Hord & Sommers, 2008). Voelkel and Chrispeels (2017) summarized Hord's 1997 report that PLCs would affect teachers' educational practice activities, especially in the professionalization process, which can help teachers plan and implement high-quality courses. And PLCs provide teachers with opportunities to learn, collaborate, and innovate. DuFour and Eaker (1998) believed that PLCs should emphasize collaborative learning. Teachers collectively explored a method or practice and share the results with members; This process can help change the learning characteristics of students.

The development and practice form of PLCs in specific cultural backgrounds are different. Unlike PLCs used in the West, Chinese schools use collective learning forms with PLCs characteristics, but not directly named PLCs. In the 1950s, China used a top-down approach to establish teacher groups for collective lesson planning and teaching exploration (Zhang & Pang, 2016). PLCs in Chinese schools are mostly the form of compulsory and artificial communities, not formed spontaneously. Besides, a unique feature of PLCs in China is collectivism. Under the influence of such character, PLCs have a development advantage to a certain extent. However, adverse effects also exist (Qiao, Yu & Zhang, 2018).

Collective efficacy is the judgment of the organization members on the collective ability, or whether the organization can achieve a certain level of performance. Collective efficacy is a peer structure and a shared belief of

teachers in schools. It can positively influence the learning of students in a cooperative form. Moolenaar, Sleegers, and Daly (2012) showed that teachers work together to impact student achievement through collective efficacy. Collective efficacy impacts organizational achievement by shaping school behavior and norms. Goddard and Skrla (2006) proposed that when the organization has a robust collective efficacy, the organization members will invest more effort and perseverance in the purpose. Collective efficacy means that in the organization, a cultural norm established because of the team's sense of competence. This environment encourages teachers to work towards the organization's mission. Collective efficacy can have a positive impact on students' academic achievements. However, more research to expand the concepts and explore processes that affect student achievement (Goddard, Goddard, Kim and Miller, 2015).

Since Deqin Middle School began the School Improvement Planning in 2011, student achievement has improved significantly (Liu & Tseri, 2012). However, according to survey data from Deqin Middle School, the effectiveness of PLCs is unclear. PLCs promotion of teachers' performance, improvement of professional quality, and innovation ability need to be further examined. It is necessary to explore the relationship between the performance improvement brought by PLCs and collective efficacy.

Research Objectives:

The objectives of this study were as follows:

1. To determine the teachers' perceptions towards professional learning communities at Deqin Middle School in Yunnan Province, China.
2. To determine the level of teachers' collective efficacy at Deqin Middle School in Yunnan Province, China.
3. To determine if there is a relationship between teacher's perceptions towards professional learning communities and their collective efficacy at Deqin Middle School in Yunnan Province, China.

Literature Review

Based on Senge's Learning Organization Theory in 1990, Hord (1997) developed the concept of a Professional Learning Community. Hord (1997) pointed out that PLCs in schools is where teachers and administrators constantly explore and share learning content, and they would take further

action based on their learning. The purpose of these actions is to provide members with a learner-central educational environment that not only promotes the effectiveness of teachers and the professional skills of managers but also brings significant achievements to students.

A learning organization is a group of people working together to enhance their ability to create results so that the organization can continue to shape the future (Senge, Kleiner, Roberts, Ross & Smith 1994). The construction of a learning organization requires five basic disciplines proposed by Senge (1990): personal mastery, mental models, shared vision, team learning, and system thinking. Each discipline includes the principles that can guide us to learn, master, practice, and test in our lives to get the success of work. Hord (1997) proposed five dimensions of PLCs. Shared values and vision, collective learning and application, and shared personal practice were based on Learning Organization Theory. Moreover, in the Southwest Educational Development Laboratory (SEDL), ten years of research and development work gradually perfected and explained PLCs. Two specific variables developed: shared and supportive leadership and supportive conditions. Five dimensions work together to promote the structure of PLCs and the improvement of schools.

The PLCs seem to be uncontroversial in promoting teacher growth. Maitland (2016) founded that teachers' trust in PLCs helps them build confidence in improving teaching. The collaborative nature of PLCs forces them to focus on students' studies and their education. PLCs were a useful intervention tool to promote teacher professional development and help schools achieve improvement goals. Zhang and Pang (2016) founded that collectivism in Chinese PLCs may provide teachers with a certain amount of support, allowing them to focus on an entire group and promote the development of PLCs. School leaders paid attention to the professional development and collaborative learning of teachers in the PLCs.

Chinese PLCs have the particular form of practice. Teaching research groups are the most common form of PLCs in China. Teaching research groups composed of teachers of the same subject and through regular collective learning activities to achieve the purpose of improving teaching practice. The tasks are to organize teachers to conduct teaching research together, actively participate in the editing textbooks and teaching experiments of essential

education reform, learn advanced teaching experience, and improve the quality of education (Ministry of Education of China, 2001). Besides, Chinese schools used other forms of PLCs. Although the term PLCs is rarely used directly in the Chinese context, the practice forms had PLCs characteristics. The PLCs in Chinese schools is usually a kind of artificial community (Wong, 2010). Collectivism is another characteristic of PLCs in the Chinese context. These cultural characteristics have prompted PLCs to inspire collective efforts to achieve a shared vision. However, this also causes members to weaken the effectiveness of reflective dialogue to avoid conflict (Qiao et al., 2018).

Based on Bandura's Social Cognitive Theory in 1997, Goddard, Hoy, and Woolfolk Hoy (2000) developed the concept of collective efficacy in the school system. Collective efficacy defined as teachers' expectations of the group and school effectiveness and their belief in the team execution of teaching practices and the school's achievement of a certain level of academic achievement. The view of all teachers that they can organize and execute actions that have a positive impact on student learning (Goddard et al., 2000). Teachers with high collective efficacy can put more effort into the organization, set higher goals, and find solutions to problems (Lee, Zhang, & Yin 2011).

Triadic reciprocal causation is the core concept of Social Cognitive Theory, emphasizing the dynamic interaction among personal factors, environmental factors, and behavioral factors. Self-efficacy is the core of personal factors and is affected by other factors, and ultimately affects the behavior of individuals or groups. Teacher self-efficacy is a kind of self-efficacy, which is the belief of teachers that they can positively influence students' ability to learn (Bandura, 1997). Teachers' self-efficacy can influence teachers' behaviors, attitudes, and student outcomes.

Bandura (1997) proposed that Social Cognitive Theory should extend the analysis of individual motivation mechanisms to the collective level, emphasized the role of collective efficacy in individuals and organizations, to study the impact of collective motivation on organizational behavior. Like self-efficacy, collective efficacy has the same four sources as self-efficacy: mastery experience, vicarious experience, social persuasion, and affective state. These four sources include factors in the ternary duality causality, which

together provide conditions for the adjustment of collective efficacy. Bandura (1993) analyzed that the positive effect of collective teacher efficacy on student achievement is greater than the impact of student Socioeconomic Status (SES). Goddard et al. (2000) proved that it has a positive correlation with student achievement. Goddard et al. (2015) investigated the relationship between collective efficacy and teacher collaboration. They believed that teacher collaboration as a direct predictor of collective efficacy.

Bandura (1997) proposed that measuring collective efficacy should examine two dimensions: individual capabilities assessment and group capabilities assessment. Goddard et al. (2004) reviewed Bandura's study of the role of collective in school's work in 1993. Based on Bandura's theory, the two dimensions of collective efficacy in schools: task analysis and group competence. Task analysis is teachers evaluate obstacles and support in teaching tasks, involves specific tasks and characteristics of student groups. Group competence is the teacher's attitude to whether the group members have the skills necessary to complete the task successfully (Goddard et al., 2000).

Considering that PLCs and collective efficacy are significant collective-level factors that promote school improvement, existing researchers have explored their relationship. Olivier and Hipp (2006) founded that successful PLCs may help improve the level of leadership building and collective efficacy. The collaboration, dialogue, and sharing in PLCs became everyday habits and school norms, teachers actively join discussions and make school decisions to show their leadership skills. The norms of the school and the excellent reputation brought by the students' success have inspired teachers' firm belief in learning from each other. Voelkel and Chrispeels (2017) proposed that collective goal, collective actions, and focus on results in PLCs would affect task analysis and group ability factors in collective efficacy. This study confirmed the findings of Lee et al. (2011) and Moolenaar et al. (2012). PLCs were a predictor of collective efficacy. Lee et al. (2011) discussed the meaning and characteristics of PLCs in the Chinese context. In a collectivist culture, long-term reciprocal relationships seem to be crucial for trust relationships in PLCs. The collaborative environment of PLCs provided teachers with the opportunity to gain collective efficacy from four sources (mastery experience, alternative experience, social persuasion, and emotional state).

Conceptual Framework

Figure1 is the conceptual framework of this study based on the theories that presented below.

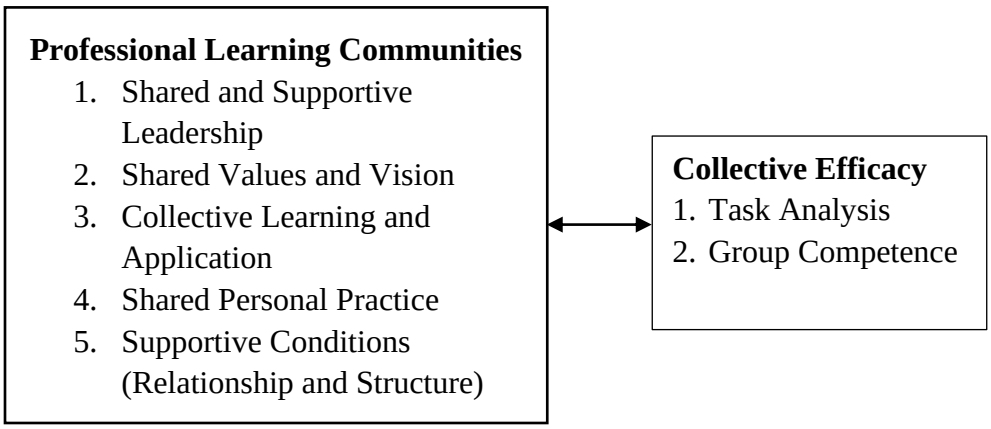

Figure1. ***Conceptual Framework of This Study***

Method

Population

The main target population of this research study was all the full-time teachers from Deqin Middle School. There were all 112 teachers, who participated in this research study in the academic year 2020.

Research Instrument

This study used a questionnaire to collect data. The questionnaire includes three parts: 3 teachers' basic information, 52 PLCs questions, and 12 collective efficacy questions. Part I of the questionnaire inquired the teachers' basic information: age, gender, and years of teaching service in Deqin Middle School. Part II has 52 questions designed to measure teachers' perceptions of PLCs. This study used the Professional Learning Communities Assessment-Revised of 52 items created by (Olivier, Hipp & Huffman 2010). Part III of the questionnaire is contents 12 questions about collective efficacy. This study directly used the Collective Efficacy Scale (short form) compiled by Goddard, (2002). Part I and Part II of the questionnaire used the 5-point Likert scale. In particular, the three questions in the Collective Efficacy Scale (3, 4, 8, 9, 11, 12,) are revers questions. Therefore, these six items need to reverse the score.

According to Olivier et al. (2010), the Alpha Coefficients of each dimension of the PLCA-R are showed in Table 1.

Table 1: *Reliability of Professional Learning Communities Assessment-Revised*

Dimensions	Cronbach's Alpha
Shared and Supportive Leadership	.94
Shared Values and Vision	.92
Collective Learning and Application	.91
Shared Personal Practice	.87
Supportive Conditions-Relationships	.82
Supportive Conditions-Structures	.88

According to Goddard (2002) and Carrière (2016), the Alpha Coefficients of each dimension of the CETS (short form) and overall are shown in Table 2.

Table 2: *Reliability of Collective Efficacy Scale (short form)*

Dimensions	Cronbach's Alpha	Source
Task Analysis	.84	Carrière (2016)
Group Competence	.75	
Total	.94	Goddard (2002)

Findings

Research Objective One

Table 3 shows a summary of the Mean and Standard Deviation of the level of teachers' perceptions towards professional learning communities in Deqin Middle School. The total mean for teachers' perceptions towards professional learning communities was at a high level, in which the mean score was 4.36. To rank the five dimensions from highest to lowest, Shared Personal Practice (4.42), Collective Learning and Application (4.38), Shared and Supportive Leadership (4.37), Shared Values and Vision (4.36), and Supportive Conditions (4.27) respectively. The mean score of each dimension of PLC is at a high level. The rating for Shared Personal Practice was the highest (4.42), and the mean score for Supportive Conditions was the lowest (4.27).

Table 3. *Means and Standard Deviations of the Level of Teachers' Perceptions towards Professional Learning Communities in Deqin Middle Secondary School (N=105)*

Items	Mean	S.D.	Interpretation
Shared and Supportive Leadership	4.37	0.61	High
Shared Values and Vision	4.36	0.61	High
Collective Learning and Application	4.38	0.66	High
Shared Personal Practice	4.42	0.66	High
Supportive Conditions	4.27	0.64	High
Total	4.36	0.61	High

Research Objective Two

Table 4 shows the summary of the Means and Standard Deviations of the level of teachers' collective efficacy in Deqin Middle School. The mean score for Group Competence was the highest (4.25), and the mean score for Task Analysis was the lowest (3.70). The level of the mean in total for teachers' collective efficacy was in the level of high, in which the mean score was 3.96.

Table 4. *Means and Standard Deviations of the Level of Teachers' Collective Efficacy in Deqin Middle School (n=105)*

Items	Mean	S.D.	Interpretation
Task Analysis	3.70	0.59	High
Group Competence	4.25	0.57	High
Total	3.96	0.50	High

Research Objective Three

Table 5 shows the analysis of the relationship between teachers' perceptions towards professional learning communities and their collective efficacy. The result showed that r = .583, and the Sig. (2-tailed) was .000, which was less than .05. Therefore, at the level of .05 (even .01), results of the Pearson correlation indicated that there was a significant positive association between teachers' perceptions towards professional learning communities and their collective efficacy (r (105) = .583, p = .000). That is, the research hypothesis for this study was accepted, there was a significant relationship between teachers' perceptions towards professional learning communities and their collective efficacy in Deqin Middle School.

Table 5. *Pearson Product Moment Correlation between Teachers' Perceptions towards Professional Learning Communities and their Collective Efficacy in Deqin Middle School (N=105)*

Correlation Test		Collective Efficacy	Conclusion
Professional Learning Communities	Person Correlation	.583**	There is a significant relationship
	Sig. (2 tailed)	.000	

** Correlation is significant at the 0.01 level (2- tailed).

Discussion

Teachers' perceptions towards professional learning communities in Deqin Middle School.

Deqin Middle School developed construction and practical activities in five dimensions of PLCs. According to the finding of this study, teachers of Deqin Middle School had a high level of opinion on the PLCs (4.36), and each dimension was at a high level. This finding was indicating that Deqin Middle School has carried out practical activities in all five aspects of PLCs, and teachers hold a positive attitude towards this. This result supported the statement of this study that since Deqin Middle School started to build PLCs in 2011, student achievements have continuously improved, and helped teachers' professional development (Liu & Tseri, 2012). Hord and Sommers (2008) emphasized that complete PLCs can bring good outcomes to school staff and students in various environments.

The commonly high level of perception showed that teachers held a high sense of identity in all aspects of the PLCs, which also means that they have a high enthusiasm for participation. Deqin Middle School PLCs provided teachers with enough opportunities to share ideas and experiences. The findings showed that teachers had the highest recognition for the Shared Personal Practice part of PLCs. Teachers enjoy communication, and they can meet some needs in peer discussions, and learn professional knowledge and skills through peer observation and interaction. This result supported the statement of the PLCs practice of Deqin Middle School in this study. In the process of establishing PLCs in Deqin Middle School, in addition to the TRG required by the educational research system, they conducted classroom teaching observations, collective exploration curriculum, and subjects research

activities (Liu & Tseri, 2012).

Teachers had similar positive attitudes towards leadership, shared vision, and collective learning in the Deqin Middle School PLCs. Because the total mean score of teachers' perceptions of Shared and Supportive Leadership (4.37), Shared Values and Vision (4.36), Collective Learning and Application (4.38) were very close, and they were all above the total mean score of PLCs (4.36). Similarly, Valckx et al. (2018) and Maitland (2016) believed that If teachers focused their shared goals on the learning of students and teachers and take responsibility together, then they would communicate with their peers, thereby gradually forming a collaborative environment. The principal provided support for the teachers' dialogue and cooperation.

The activities of PLCs in Deqin Middle School gradually integrated into the school routine. The mean score of the Supportive Conditions part at a high level. Teachers were satisfied with the support of time, space, data information, and interpersonal relationships. Zhang and Pang (2015) founded that the PLCs provided teachers with a certain amount of time, space, and necessary resources for teacher cooperation because of the requirements of the teaching-research system policy. However, teachers' recognition of supportive resources for professional development is relatively low. The total mean score of the Supportive Conditions part was lowest in PLCs. Wang (2015) and Stoll, Bolam, McMahon, Ross, and Smith (2006) argued that external support such as additional funds and expert teams is a necessary condition for the development of sustainable PLCs. Sargent and Hannum (2009) believed that the effectiveness of establishing and maintaining PLCs might depend on the availability of school financial resources.

This view of teachers at Deqin Middle School may be related to the financial policies of public schools and local SES conditions. First, Deqin Middle School is a public school at the stage of compulsory education. According to the compulsory education finance policy implemented in China, the financial resources of schools in rural compulsory education mainly come from government budget allocations (Ding, 2008), followed by schools applying for special training funding from the government (Liu, Murphy, Tao & An, 2009). Besides, as schools carry out PLCs practice activities, and teachers' demand for professional learning activities grows, the corresponding financial resource

support needs will also increase. Deqin Middle School located in the border areas. Therefore, the barriers for schools to seek help from other developed regions are higher than those in cities and developed areas. And the school district provides support for the school's needs of technology, expert team, and materials are limited.

The sustainability, effectiveness, and innovation of PLCs practice need to be enhanced. In the progression of professional learning and teaching practice, it is a matter of course that teachers hope to obtain more professional development support. Still, the emergence of this demand may also be affected by objective factors. First is the limitation of financial resources and the high cost of hiring a team of experts and providing materials. These elements may become a hindrance to PLCs sustainability. Secondly, the professional development support currently provided may not help teachers solve emerging problems, and the effectiveness of PLCs practice needs to be improved. Moreover, teachers excessive rely on to seek the support of external professionals, while neglecting to develop their innovative capabilities. Maitland (2016) believed that there is enough time and opportunity to support teachers' teaching practices in PLCs. These structural conditions would stimulate the collective desire to push them to a higher standard. PLCs generates continuous learning opportunities to promote the professional development of teachers.

Teachers' collective efficacy in Deqin Middle School

Teachers had a great belief that Deqin Middle School can achieve a certain level of performance. According to the findings of this study, the collective efficacy of teachers in Deqin Middle School was at a high level (3.96). Teachers' confidence in Task Analysis was lower than that of Group Competence. This finding showed that teachers held lower judgments in the review of the factors that affect teaching tasks, but they thought that the teacher team or the school could achieve specific achievements. Goddard et al. (2000) believed that the teacher group would assess the challenges of school teaching, including student group characteristics, student abilities and motivations, and community resources. Combining these assessment results, teachers make judgments about their peers' abilities. The decisions of these two parts are conducted simultaneously.

These showed that even if students' family background and support conditions of the local community and students' learning motivation are not excellent, teachers still believe that they can help students overcome obstacles. It can be speculated that the teacher team has high morale and a healthy atmosphere, which provides teachers with elements of self-regulation and promotes teachers' confidence in achieving common goals. Bandura (1993) concluded that the effect of collective efficacy on student achievement is higher than that of SES. Teachers' perceptions of students' SES, teaching materials provided by the school, and teachers' professional level would affect their judgment of teaching (Bandura, 1997). Goddard et al. (2000) believed that when teachers take into account the difficulty of teaching tasks, they could produce a view on the collective ability of successfully educating students.

The relationship between teachers' perceptions towards professional learning communities and their collective efficacy in Deqin Middle School

According to the research findings, there is a positive relationship between teachers' perceptions of PLCs and their collective efficacy. This study discussed previous studies that involved PLCs, collective efficacy, and the relationship between them. These studies supported the findings of this study to varying degrees.

Olivier and Hipp (2006) founded that there is a positive correlation between PLCs and collective efficacy. The core of PLC is to focus on the learning of teachers and students. Teachers had a common belief and sought opportunities to improve their professional qualities and be responsible for students' learning. Voelkel and Chrispeels (2017) founded that the characteristics of PLCs are significantly related to the two dimensions of collective efficacy. PLCs could predict the collective efficacy of teachers and emphasized that the common goals and focus on results in PLCs are the key predictors. The collective goal affected the teachers' views, and they thought that they could meet the needs of students. Teachers pay attention to the results, and continuously analyze student data and information in active participation in cooperative activities, thereby adjusting and changing teaching strategies. On the contrary, Maitland (2016) proposed that PLCs may not improve the collective efficacy of teachers. Still, the more influential the collective efficacy of teachers, the more they tend to achieve more goals. And PLCs can help teachers to build confidence.

Salloum (2011) founded that when the organizational structure is more helpful to policies and procedures to solve problems, the higher the collective efficacy. The principal should provide support for the school's conversion to PLCs and give the teachers four sources of information on collective efficacy. Lee et al. (2011) analyzed the relationship between PLCs and collective efficacy in the Chinese context. The collaborative environment created by PLCs promotes a trust relationship between members, which is crucial for achieving school goals.

In conclusion, the previous study supported the results of this study, and there is a relationship between teachers 'perception of PLCs and their collective efficacy. Moreover, this study speculates that PLCs can provide teachers with four information sources needed for efficacy to improve their collective efficacy, thereby overcoming the obstacles of SES and promoting school improvement.

For the sustainable development of PLCs, school administrators should regularly evaluate the practice of PLCs and the needs of teachers. And devote to creating a healthy learning environment for teachers and students and providing various conditions of support for PLCs practice. Under the current policy, the administrator should optimize the financial allocation, according to the implementation status of the PLC and the needs of teachers, as far as possible to meet the school's continuous improvement. In the case of insufficient financial resources support and low SES in schools and communities, administrators can optimize PLCs structure to provide four information sources to promote teachers' collective efficacy against the impact of SES on student achievement.

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