The Use of Professional Learning Community in the Development of Students' Teacher Curriculum Design Skills and Thai L1 Young Learner Reading Comprehension

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Abstract

This paper focuses on investigating the effectiveness of the professional learning community (PLC) on student teachers' curriculum development skills, as well as the effectiveness of the professional learning community (PLC) on Thai L1 young students' reading comprehension. The instruments utilized for the study include the following: a professional learning community activity, learning management for developing students' reading comprehension, a test for student teachers' curriculum design skills, and a test for students' reading comprehension. The data were analyzed using percentage, mean score, standard deviation, a pair samples-test, and the effectiveness index, with the criterion of 80%. The results of the study indicate that the professional learning community (PLC) positively affected student teachers' curriculum design skills as the effectiveness of the method was 94.57/94.96 (E1 94.57/E2 = 94.96), reaching the criterion of 80. The professional learning community (PLC) was also beneficial in developing students' reading comprehension. The effectiveness index of the method was 83.54/85.77 (E1 = 83.54/E2 = 85.77), reaching the criteria set at 80. The results of the study therefore suggest the benefits of the professional learning community (PLC) for both teacher education and student skill development.

Keywords: Professional learning community (PLC), Teacher Education, Reading comprehension

Introduction

Reading is an essential skill for young learners as it opens opportunities to explore the textual communication offered through texts. Once a child can read, he or she can access the information necessary for learning in both the education system and the real-world context (Langan, 1992). To be specific, the success of reading depends on students' comprehension of texts as learners have to put effort into decoding both textual and contextual input to understand the meaning expressed through the texts. According to Hellyer, Robinson, and Sherwood (2001), reading comprehension is the end product of reading instruction since learners need to invest what they learn in vocabulary, grammar, and text interpretation lessons to comprehend the written text. Therefore, the ability to comprehend written texts becomes a priority in the processes of young learners' development in the official education system for most of the world (Alderson, 2000).

Unfortunately, reading comprehension comes as both an opportunity and a challenge of learning because developing the skill is complicated. Many components of successful reading comprehension must be considered, especially for young learners who are at the beginning of their educational path as decoding texts is a new thing learned in school. According to Krashen and Terrel (1983), children acquire their first language naturally through imitating caretakers' words, using them in sentences, and evaluating the success of communication. When they enter school, these words are exposed in the sign system. Therefore, they have to learn the alphabet, vowels, punctuation, and how they are put together in a spelling system to make up a word. However, the organization of texts is different from spoken language. To demonstrate comprehension of texts, learners need to analyze the main ideas, supporting details, and conclusions. This organization is not normally found in daily conversations that young learners are familiar with (Zhang, 2009). The difficulties result in problems in language classrooms around the globe (Cai & Oakhill, 2011), including in Thailand (Phothirach, Suykaduang, & Athan, 2019).

Although reading comprehension is important for students' growth in education, teacher education is also important in developing student teachers with abilities to design curriculum and lesson plans to solve the problems in language classrooms. Furthermore, student teachers need to be aware of their learners' backgrounds and apply an appropriate solution to solve their problems (Labaree, 2000). In designing a curriculum, purposes, principles, expected outcomes, content, sequencing, and evaluation need to be taken into consideration (Graves, 1996). Curriculum designers are expected to create a learning environment that could match the needs of learners. This would contribute to success in finding class solutions and developing students' skills.

Therefore, developing curriculum design skills for students teachers plays a great role in developing students' reading comprehension.

As mentioned, understanding the nature of students' learning is crucial for developing curriculum design skills. Once designers can assess the conditions, problems, and needs of students in learning, they can plan learning activities that could improve students' abilities (Richards, 2001). In this case, the discussion among stakeholders in an educational context could benefit students' needs analysis and curriculum development. The professional learning community could be a learning management method that provides opportunities for teachers, department heads, and school administrators to discuss the possibility. According to DuFour, DuFour, and Eaker (2008), the processes of the professional learning community (PLC) include the collaboration of teaching staff and administrators having a specific purpose of enhancing teaching and learning quality and conducting research projects. This could allow student teachers to discuss with experienced staff in school in terms of problems and needs in developing reading instruction. The results of the discussion could be beneficial in developing students' reading comprehension and student teachers' curriculum design skills. With these rationales, the current study aims to employ the processes of the professional learning community (PLC) to develop student's reading comprehension and student teachers' curriculum design skills in order to investigate the effectiveness of the professional learning community (PLC) on student teachers' curriculum development skills, as well as the effectiveness of the professional learning community (PLC) on Thai L1 young students' reading comprehension.

Literature Review

The Development of Child Reading Comprehension

The ability to comprehend written output in young learners is a complicated process that involves components in development. Flax, Realpe-Bonilla, Roesler, Choudhury, and Benasich (2009) suggested that children develop their language comprehension in the first three years. The processes start from the understanding of words and signs given by parents or caretakers. Children who develop language comprehension would respond to the input correctly using eye contact, movement, and language output. Bast and Reitsma (1998) indicate that children who develop language comprehension earlier tend to better develop reading comprehension in schools. Nonetheless, reading comprehension development needs intensive vocabulary instruction. Hu and Nation (2000) found that learners need to understand 98% of words in a written text to understand the content. Bonk (2000) also indicated that learners with less than 75% vocabulary knowledge of the text they are reading are not capable of analyzing the main idea and understanding the text.

Therefore, to enable students to read, instructors should make sure that a great size of vocabulary knowledge is developed. In addition, learners need to learn the structure of the text. The organization of the articles, essays, or passages needs to be analyzed to comprehend the messages. These components make it complicated for young learners to master the skills, and specific instructional methods should be involved in the development of reading comprehension.

Teacher Education and Curriculum Design Skills

Teacher education plays an important role in developing the quality of education in each nation. The quality of teachers in managing classes, understanding learners, and designing curricula signifies how successful a class is (Green, Eady, & Andersen, 2018). According to Darling-Hammond (2017), curriculum design skill is one of the major concerns in teacher education around the globe. Student teachers should be able to understand the principles of curriculum design and use them in real practice effectively. Grant (2006) presented components that the designers of the curriculum need to consider in creating an effective learning environment for the class. The knowledge of educational objectives, curriculum structure and design, content, teaching and assessment, curriculum management, roles and responsibilities, and evaluation of curriculum effectiveness is expected to be developed in the path of teacher career development. These skills take time and effort to master, and students and teachers need to prepare themselves before facing difficulties in the real context.

Professional Learning Community (PLC)

Since reading comprehension is an issue in the Thai context, including developing student teachers to be able to design a curriculum that could lead to the solution of the problem, the professional learning community (PLC) could be implemented to improve the quality of both aspects. According to DuFour, DuFour, and Eaker (2008), a professional learning community (PLC) could be defined as the way teaching staff and administrators work together to achieve a specific aim, such as improving teaching and learning quality or completing a research study. Similarly, Barth (2006) suggested that PLC is a learning management method that enables instructors and administrators to share ideas and practices to improve teaching, learning, and student accomplishment. Toole and Louis (2002) also suggested that the benefits of PLC rely on opportunities provided by teacher collaboration. Experiences from expert teachers and student teachers could be shared to develop the desired learning atmosphere.

In addition, scholars have given a model for putting the concepts of the professional learning community into practice (DuFour, 2004; Hord, 1997; Senge, 1990). 5 dimensions of the professional learning community (PLC),

including shared vision and mission, leadership sharing and supportive leadership, collective learning and learning application, personal practice sharing, and organization support were presented by Hord (1997) and became influential in the area. The detail of Hord's professional learning community (1997) is presented below.

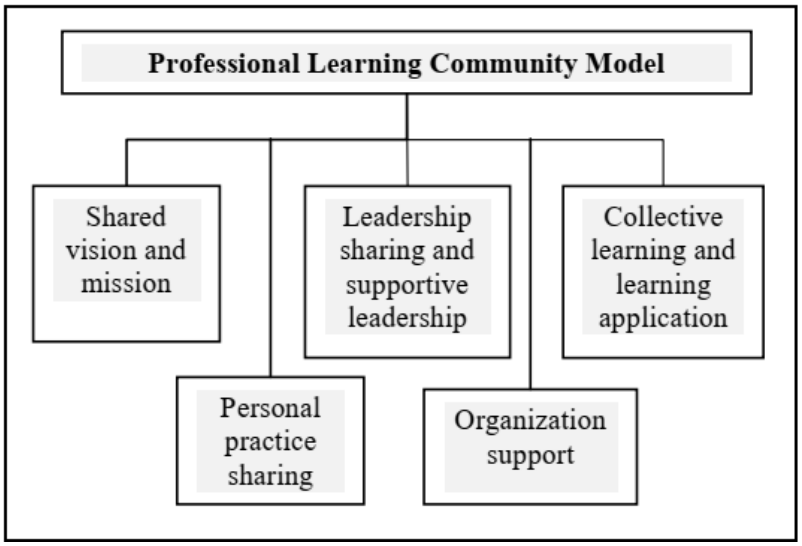

Figure 1. Hord's Professional Learning Community (1997)

It is important to note that the professional learning community (PLC) encourages the participation of stakeholders in an educational setting. In the current study, the experiences of teaching staff and administrators are used in both teacher education and student skill development. Student teachers could learn from professionals by sharing ideas and discussions. At this point, they could develop their curriculum design skills, and the developed curriculum could be beneficial in improving students' reading comprehension.

Previous Studies

Since the effectiveness of PLC could influence both the managerial and the student development aspects, the principle is employed in previous studies in teacher and student development. For example, Owen (2014) studied the uses of PLC in teacher and student development in Australia. It was found that there was teacher development in terms of the ability to engage in insightful discussions, awareness of responsibility, and teamwork in schools with PLC activities. Teachers also reported that they could improve their teaching quality, and this benefited students' skill development. Hairon and Tan (2015) also found the benefits of PLC in teachers' development in Singapore and China as the method encouraged teacher mentoring processes that could point out strengths, weaknesses, and opportunities. In the language

classroom, Slack (2019) indicated that PLC brought about meaningful changes in teachers' mindsets and practices, which led to the improvement of students' English skills in a middle school in the USA. Furthermore, Pawan and Craig (2015) also suggested that collaboration between English language instructors and content area teachers is beneficial in designing a course that could build students' background knowledge, provide comprehensible input, and develop language and content objectives. It is noteworthy that previous studies mostly focused on professional teacher development and the size effect of the project. However, the potential of PLC in teacher education is under-explored. The current study employed the professional learning community in developing student teachers by encouraging insightful discussion between the experienced teaching staff and administrators in a primary school in Thailand in order to develop both student teachers' curriculum design skills and students' reading comprehension. The research questions are as follows:

1. To what extent does the professional learning community (PLC) improve student teachers' curriculum design skills?

2. To what extent does the effectiveness of the professional learning community (PLC) improve Thai L1 young learners students' reading comprehension?

Methodology

Participants

There were 3 groups of participants including a group of 44 student teachers in the Faculty of Education, Mahasarakham University, Thailand, a group of 10 professional teachers and administrators in Huakua School, a primary school in the area, and a group of 26 students of the upper level of primary school (grade 4-6). All participants were selected using the purposive sampling method. The participants were treated anonymously.

Instruments

The instruments utilized for the study include a professional learning community activity, learning management for developing students' reading comprehension, a test for student teachers' curriculum design skills, and a test for students' reading comprehension. The professional learning community activity consists of 12 discussion sessions for professional teaching staff, administrators, and student teachers. The aim of these sessions is to allow the participants to discuss the current situation, problems, and needs of teaching reading comprehension to students in the school. The learning management for developing students' reading comprehension was designed in brain-based learning, considering the data gained from the PLC. The test for student teachers' curriculum design skills was outlined in 30 multiple-choice question items with the difficulty of .20-.80, discrimination of .20-1.0, and reliability

of 0.93. The test for students' reading comprehension consists of 40 question items designed in multiple choices. The difficulty, discrimination, and reliability of the items were at .51-.86, .30-1.0, and 0.87 respectively.

Data Collection

The data were collected in the 2019 academic year. Student teachers were assigned to take a day within the week to observe professional teaching in the Hua Khua school. They participated in the professional learning community sessions for the whole semester and took part in the learning management design. The student teachers' performances during the process and at the end of the process were used in evaluating their curriculum design skills. The learning management was employed in the second semester, and the students' performances during the process and at the end of the process were used in evaluating their reading comprehension.

Data Analysis

The data were analyzed using percentage, mean score, standard deviation, a pair samples-test, and the effectiveness index, with the criterion of 80%.

Results

Table 1. The effectiveness of the professional learning community (PLC) on student teachers' curriculum design skills

	Full marks	$\bar{x}$	**S.D.**	**%**
Process effectiveness (E_1)	100	94.57	5.47	94.57
Outcome effectiveness (E_2)	30	28.49	2.18	94.96
Effectiveness Index (E_1/E_2) 84.57/83.97				

During 12 weeks of the professional learning community (PLC) activities, students' teachers in the current study took 10 curriculum design exercises. The result of the study indicates that the average score of student teachers during the use of PLC was 94.57% ($\bar{x}$= 94.57, S.D = 5.47) of the full score. Also, student teachers' average score after the processes of PLC was 94.96 % ($\bar{x}$= 28.49, S.D = 2.18). Therefore, the effectiveness index of the professional learning community (PLC) on the student teachers' curriculum design skills was 94.57/94.96 (E_1 94.57/E_2 = 94.96), reaching the criteria set at 80. It could be interpreted that encouraging student teachers to participate in the insightful discussion of professional teaching staff and administrators benefits the development of their curriculum design skills.

Table 2. The effectiveness of the professional learning community (PLC) on students' reading comprehension

	Full marks	$\bar{X}$	**S.D.**	**%**
Process effectiveness (E_1)	100	83.54	4.56	83.54
Outcome effectiveness (E_2)	40	34.03	2.53	85.77
Effectiveness Index (E_1/E_2) 84.57/83.97				

The data gained from PLC activities indicates that the reading comprehension problems of the students in the target school varied from word to organization level. The problems of illiteracy, incomprehension of word meaning, and incapabilities in synthesizing text organization were found. The PLC decided to employ learning management using the principle of brain-based learning to solve problems as it could address student learning and learning outcomes from the human brain's point of view. The learning management was collaboratively designed by the professional teaching staff and student teachers. It consists of 6 lesson plans of 12 hours. The students took reading comprehension exercises accounting for 100 marks during learning in the learning management and a test at the end of the process.

The result of the study indicates that the average score of students during the use of learning management was 83.54% of the full score ($\bar{x}$= 83.54, S.D = 4.56). Accordingly, students' average score after the processes of learning management was 85.77% of the full mark ($\bar{x}$= 34.03, S.D = 2.53). Therefore, the effectiveness index of the professional learning management on the student teachers' curriculum design skills was 83.54/85.77 (E_1 = 83.54/E_2 = 85.77), reaching the criteria set at 80. Thus, it could be interpreted that the learning management designed by the data gained from the professional learning community session was beneficial in improving students' reading comprehension.

Discussion

It could be noted that the professional learning community (PLC) was effective in developing student teachers' curriculum design skills. Participating in collaborative discussions of idea sharing and reflection with professional teaching staff and administrators helped in the progress of student teachers' career paths. The result of the study was in line with Salleh and Tan (2015), who also suggest that the benefits of PLC rely upon how it allows teaching mentoring. This could contribute to the reasonable working culture in schools, the effectiveness of teaching, and teamwork among teaching staff. These factors are also important in teacher education.

Subsequently, the data gathered from the PLC was beneficial in designing an instruction method that could serve the needs of contexts. In the current study, PLC sessions were concluded with the idea of using brain-based learning as the core principle to design a curriculum for solving reading problems in a context with student skill diversity. The fact that the selected method proved to be beneficial in improving reading comprehension confirmed the benefit of PLC in developing teaching quality as suggested by the previous studies in the area (Barth, 2006; DuFour, DuFour, & Eaker, 2008; Worapun, Khamdit, and Siridhrungsri, 2022). It seems that insightful analysis of an educational context provided by the processes of PLC could lead to positive results in solving class problems.

In addition, it was also found that brain-based learning was an effective instructional approach in developing Thai young L1 learners' reading comprehension. According to Cornnell (2009), Brain-based learning (BBL) is a set of educational "techniques" derived from neurology and cognitive science research. The method can improve students' learning in a comprehendible but challenging learning atmosphere. Therefore, it could improve the quality of teaching as well. In the current study, the BBL helped Thai young L1 learners acquire the knowledge that benefits the processes of decoding sign language, analyzing word meaning, and understanding text organization as it results in the improvement of their reading comprehension.

Conclusion

The results of the study identified that the professional learning community (PLC) positively affected student teachers' curriculum design skills. The method was also beneficial in developing students' reading comprehension. Thus, the results of the study could be implicated in the pedagogical aspect as teachers and school administrators could employ the processes of PLC to bring the expected outcomes into their educational context. Clear goals, collaborative working, and open-minded working culture could result in camaraderie among working staff and students' learning achievement, which is the ultimate goal of education management. Furthermore, teacher education personnel should be aware that the professional learning community (PLC) could also be used to develop student teachers' skills. They could learn to develop curricula from experienced professional teachers who could provide information about real practice in an educational context. Further studies are encouraged to use PLC in developing other skills of language learning such as speaking, listening, and writing. In addition, further studies could also employ the PLC in developing other skills of teacher education.

In terms of methodology, the student sample size of the current study might not cover the size of quantitative research due to the size of the school

that participated in the project. Therefore, further studies should include more participants to provide validity of statistics. Similarly, qualitative research instruments should be employed to provide a broader understanding of how the professional learning community (PLC) improves student teachers' skills and students' abilities.

Human Studies: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Data Availability: All the data are included in the content of the paper.

Conflict of Interest: The authors reported no conflict of interest.

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