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Implementation of Professional Learning Community among Teachers in Schools: A Systematic Literature Review

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Abstract

The emergence of the Professional Learning Community (PLC) concept has pioneered the existence and strengthened of the teaching community. PLC formally serves as a professional learning team and through this team, teachers work with a spirit of openness, reflect critically, share their experiences, ideas, expertise, and engage in an ongoing assessment process that fosters deep team learning. So, it is important to look at past studies related to PLC as PLC is among the factors of teacher effectiveness and schools as well. This paper aims to produce a literature review that answers questions such as: i) What are the challenges in the implementation of PLC among teachers; ii) How PLC can develop the innovation of teachers; and iii) How can the Professional Learning Community develop teacher competencies? The systematic literature review method is used as the methodology in this paper. Articles from 2018 to 2022 related to PLC were searched from three main databases, namely, Scopus, Web of Science, and Google Scholar. The finding show a total of 384 articles were identified; however, after screening based on the inclusion and exclusion criteria, only 76 articles were used as final articles for review related to PLC challenges and the impact of PLC implementation on innovation development and teacher competencies. The results of this literature review are beneficial for future studies on PLC and can be a guideline for higher authorities in the field of education, especially the Ministry of Education, to design quality PLC programs that can enhance teacher professionalism and, in turn, improve student learning. It is recommended that a more detailed implementation of PLC be considered in further studies, as its strategy and effectiveness still have not been sufficiently examined.

Keywords: Professional Learning Community, Teachers, Schools

Introduction

A teacher should always use new approaches in the delivery of their teaching to help students develop knowledge and skills better. Thus, teachers need to be equipped with knowledge and skills to realize this aim (Tayag & Ayuyao, 2020). This is because it is common knowledge that teacher quality is one of the most significant influences on student outcomes (Ovenden-Hope

et al., 2018). Because a teacher's teaching performance and school improvement efforts are very closely related to a teacher's competence (Ching & Don, 2018), the efforts to achieve continuous professional development of teachers are the focus of every Ministry of Education in every country (Avidov-Ungar, 2019).

Based on the elements required to moving towards school effectiveness, the emergence of the Professional Learning Community (PLC) concept pioneered the existence and strengthening of teaching communities (Chediak, Kunnari, Inforsato & de Amorim, 2018). These elements consist of collaborative, focused learning, and shared leadership. In addition, PLC is a process of knowledge acquisition conducted through a collaborative inquiry process and problem-solving process resulting from activities that are underpinned by the learning needs of teachers. These activities are sourced from the learning process related to teaching and the teacher's learning experience, where the results can be observed through the teacher's competence in the school (Aslamiah et al., 2019).

PLC is formally used to refer to a professional learning team, and it is through this team that teachers work in an environment of awareness, gain feedback, share their knowledge, and engage in a regular feedback approach that supports deep team learning. This teamwork is clearly conducted through a systematic model of problem solving and learning that encompasses the learning cycle, application, improvement, and application of a collaborative culture and collective accountability for the development of effective learning practices and subsequently, better student performance. One of the learning community approaches is for teachers to learn with other teachers about cross-subjects collaboratively. PLC can also take place informally, such as the process of sharing knowledge, experience, and skills (Aslamiah et al., 2019). However, according to Aslamiah et al (2019), informal PLC does not occur in the context of planned and structured program implementation. Examples of informal forms of professional learning are teachers' conversations about learning, unstructured guidance, and provision of skills training from experienced teachers to less experienced teachers, among others.

There is an understanding that arises from the stance that the improvement of teacher learning through collaboration in PLC will also lead to the improvement of student learning (Lin & Lee, 2018). This is also agreed by Gunning et al (2020) who stated that improving student outcomes is often a goal of professional development. PLC is also known as the Professional Development Community (Avidov-Ungar, 2018). Over the past two decades, research on PLC has grown into international studies related to teacher development and school improvement. A review of school restructuring programs in the United States has broadly suggested that schools that demonstrate consistent and robust PLC characteristics, teacher classroom pedagogy are more likely to change in line with ongoing reform efforts (Warwas & Helm, 2018).

Through the implementation of PLC, which emphasizes the understanding of the school's values, mission, and vision, these benefits are shared among the school community, such as the stakeholders in the school (e.g., teachers, students, and parents). Teachers revealed that through the practice of sharing values; mission; and vision; the school community, including teachers and students, have a clear understanding of the mission and vision of the school that they need to instill in the school culture and daily routine (Tahir & Musah, 2020). Through PLC as well, teachers not only exchange teaching materials but constructively, they form and implement teaching units consistently by creating a set of shared teaching practices and methods (Warwas & Helm, 2018). In addition, there are

teachers who engage in professional development across grade levels and content areas to develop knowledge and strategies (Martin et al., 2019).

However, there are some challenges in the implementation of PLC. According to Aktekin (2019), many professional development programs today only expose teachers to the latest theories and initiatives without providing opportunities for practice, allotted time, and constructive feedback. These three elements are necessary and are the lifeblood of professional development. Therefore, teachers who face constraints in obtaining this opportunity cannot benefit from the program as a whole. Furthermore, according to Lee, (2020), a school's organizational culture has a greater impact on teacher effectiveness than PLC. Hence, there are questions related to the challenges of PLC implementation so that the relevant parties can face them. This is because the existence of these challenges also raises the question of the actual effectiveness of PLC on the level of professionalism among teachers.

Research Questions

PLC related studies should be sought as a reference for teacher learning in answering these questions:

- i. What are the challenges in the implementation of PLC among teachers?
- ii. How can PLC develop teacher innovation?
- iii. How can PLC develop teacher competencies?

To answer the questions of this study, a systematic review was developed, which can contribute to the expansion of knowledge about the combination of teacher training in education.

Methodology

This review followed rigorous, comprehensive procedures (Onwuegbuzie et al., 2010).

Search Strategies and Selection Criteria

The methods used for literature search, selection, inclusion and analysis were predetermined and defined in the protocol. PLC-related articles from 2018 to 2022 were searched from three main databases, namely, Scopus, Web of Science, and Google Scholar. Among the published articles involved in this search were the Journal of Administrative and Leadership Education Management, Journal International Educational Management, Journal of Social Science Research, International Journal of Leadership in Education, Teaching College Records, Irish Educational Studies, and Journal of Management in International Education.

Search terms were combined to identify challenges in PLC implementation and the impact of PLC on innovation and competency development among teachers. The keywords used were aimed at identifying articles related to challenges, elements of innovation, and competencies in PLC. For some databases, existing filters were used to identify relevant articles. If none exists for a particular database, the existing filters were adjusted to a minimum. Among the filters used in the Scopus database are in terms of year (2018 to 2022), field (social science), document type (article), publication stage (final), source type (journal), and language (English). Meanwhile, the filters used during document search in the Web of Sciences database are year (2018 to 2021), language (English), and document type (journal). Additionally, the filter used in Google Scholar is the year (2018 to 2022). Table 1 demonstrates examples of keyword searches and the number of documents obtained. The bibliography of articles retrieved was self-searched for relevant references.

The selection of papers that matched the admission and exclusion criteria followed a process and steps carried out by the author and three independent reviewers. Articles were filtered at an early stage based on their title, keywords, and abstract or table of contents. The full text of selected articles was then used to validate eligibility based on inclusion criteria and relevance to the research questions. Disagreements are resolved through discussion. If a consensus could not be reached, a fourth reviewer was referred to. When an article is clearly the most recent article, then only the most recent publication is saved. Figure 1 shows the flow chart of the selection process.

Admission Criteria

Articles are evaluated according to the PICO approach, which stands for Population, Phenomenon of Interest, and Context.

Table 1

Document Search Keywords and Number of Documents in the Database

Database	Search keywords	Number of documents obtained at the initial stage before filtering	Number of documents retrieved after filtering
Scopus	TITLE- ABS- KEY (“Professional Learning Community” AND “Teachers” AND “School”)	649	170
Web of Science	ALL= (“Professional Learning Communit*” AND “Teacher*” AND “School”)	579	202
Google Scholar	“Professional Learning Communit*” AND “Teacher*” AND “School	12	9

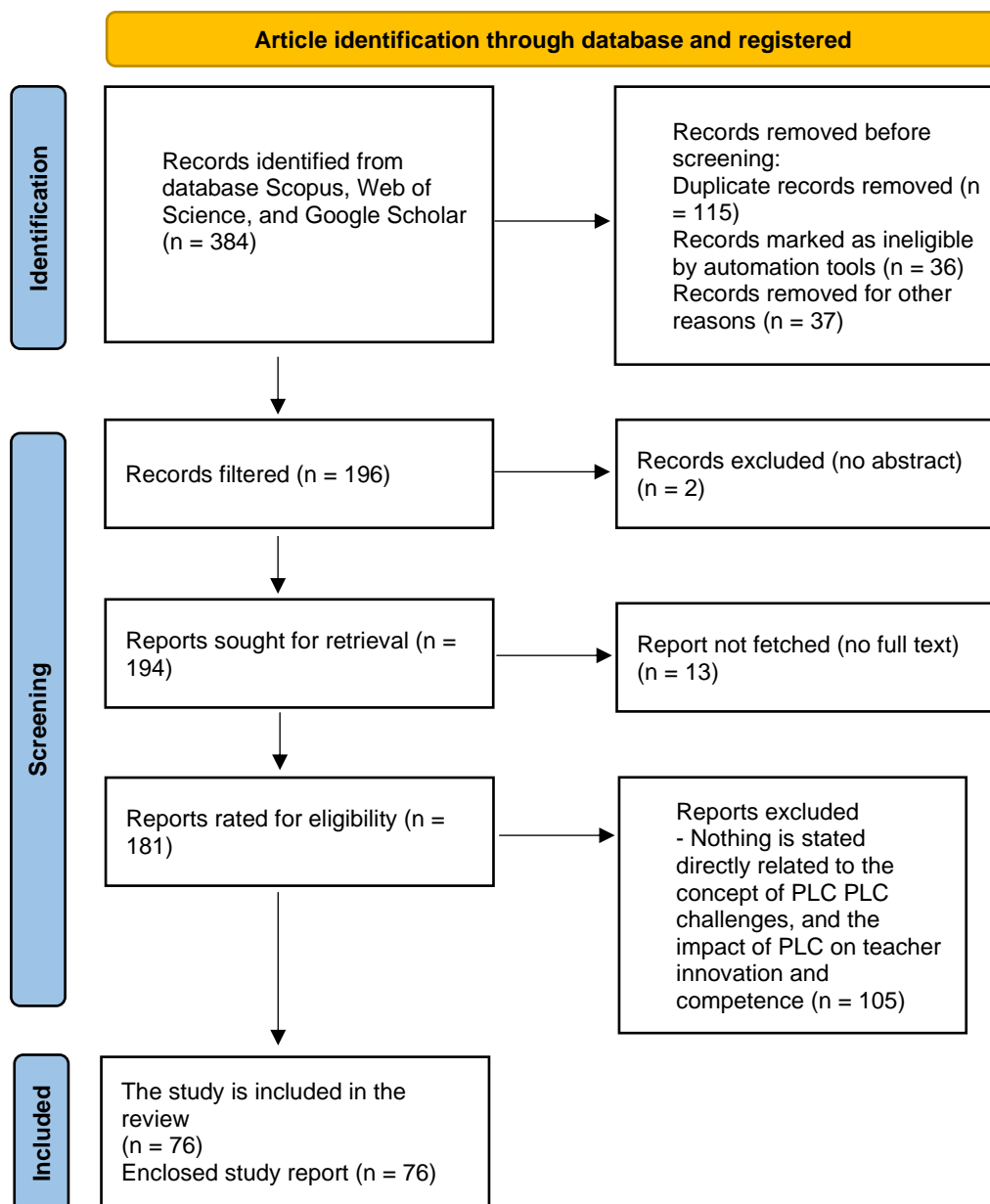


Figure 1: Publication Selection Process Flow Chart

Population

The population involved in this review is teachers in government or private schools. The schools in research are schools in the city, as well as in the suburbs.

Characteristics of Findings/Considerations

This systematic review considers all study articles conducted on teachers in schools in all countries without limiting them to a few countries. The study also reviewed if the study was conducted using a quantitative, qualitative, or mixed designs.

Research Design

Research articles are considered to meet the criteria if three conditions are met: (1) the research questions are clearly stated and well targeted; (2) the methodology is detailed and rigorous; (3) the researcher conducts PLC-related studies in the context of challenges,

improvement of either innovation, or teacher competencies. Inclusion criteria were used for the studies contained in this systematic review. Assessed research articles should present an analysis or conclusions that specifically target studies that meet all inclusion criteria.

Exclusion Criteria

This systematic review does not analyze research articles that are focused on population comprising teachers or educators teaching staff in colleges or universities, which are also included in the search even though the keyword has been specified “school”. This means this work is centred on articles that perform research in schools with students aged less than 17 years.

Data Collection

A member of the research team completed the data extraction form, which was reviewed by the first and second reviewers. Disagreements are resolved through discussion; if a consensus could not be reached, the fourth member of the team is consulted. The data extracted included: (a) objectives; (b) methodology; (c) inclusion and exclusion criteria; (d) results; and (e) conclusions. Only results and conclusions relevant to the primary study are kept and included for analysis.

Quality Assessment

Quality is assessed in five key areas: (a) appropriate and clearly focused questions (consistent with the PICO approach); (b) a description of the methods and their relevance; (c) the quality of literature search and implementation methods; (d) the methods and inclusions of quality assessment for the accompanying studies; and (e) linking between the objectives of the research article and the objectives of this paper. Disputes are resolved through discussion; if a consensus could not be reached, a fourth reviewer is consulted. Not all studies are eligible for inclusion in this systematic review, thus, ratings are dependent on the study design of the accompanying study. No articles are excluded based on low quality ratings. However, during the analysis, the quality rating influenced the weight given to the conclusions presented by the authors.

Findings

Among the 384 documents initially identified, 196 potentially relevant titles were screened for retrieval (Figure 1). After screening, 194 articles were retrieved and 181 full-text articles of potentially relevant research were examined in detail. After scrutiny, only 76 articles were selected. The information contained in these 76 reviews, which contains descriptions related to the concept of PLC, the challenges of PLC implementation and the development of innovations and competencies through PLC is compared with the comments that have been rejected due to lack of information on these matters.

Among the 76 articles that were analyzed, 24% of them, which is 18 articles, did not state any challenges of PLC and the development of innovation and competence through PLC but stated the concept of PLC in the article. In addition, a total of 20 articles (26% of the total articles) only stated related to the challenges of PLC implementation, while eight articles (11%) only outlined the development of innovation through PLC and 19 articles (25%) only emphasized competency development through PLC.

In addition, out of the 76 articles as well, only 2 articles (3%) each outlining either the challenges and development of innovation or challenges along with competency

development and only one article (1%), which has all three of the findings related to PLC challenges, innovation, and competency development through PLC implementation. Table 2 shows a summary of the relevant analysis of these 76 articles, while Table 3 describes in detail the 11 articles that have at least two items from the previously stated research questions (e.g., challenges, innovation development, and competency development).

Table 2
Summary of Article Description Based on PLC Challenges, Innovation Development, and Competency Development Through PLC

	Detail	Number of Article	Percentage
1.	The article contains the concept of PLC but does not state the challenges, innovations, and competencies from the implementation of PLC.	18	24%
2.	Articles outlining the challenges of PLC implementation only.	20	26%
3.	Articles containing only innovation development from PLC implementation.	8	11%
4.	Articles containing only competency development from PLC implementation.	19	25%
5.	Articles that do not state challenges but contain innovation and competency development.	6	8%
6.	Articles containing challenges and innovation developments from PLC implementation.	2	3%
7.	Articles containing challenges and competency development from PLC implementation.	2	3%
8.	Articles containing PLC challenges, innovation development and competency development from PLC.	1	1%
Total		76	100%

Table 3

Article Descriptions that answered at least two research questions

Author	Country	Background of Study	Issues/Discussion	Methodology	Findings
Carpenter, 2018	United States	Exploring the shared workspaces and interactions of PLC in schools.	Information sharing provides teachers with a problem-solving process, i.e., a teacher strives to improve their teaching practices by gaining knowledge from each other in PLC. Sharing information intellectually and physically is called a shared workspace.	Qualitative (Semi-structured interviews and observations)	The attributes and characteristics of effective collaboration in PLCs greatly influence the professional outcomes of the learning community.
Ching & Don, 2018	Malaysia	The purpose of this research was to determine the relationship between professional development and school continuous improvement.	Short-term courses and limited collaboration are ineffective in helping teachers master their teaching strategies. Thus, the problem of teacher field competence affects the continuous improvement of the school.	Quantitative (Survey)	The results showed that professional development and continuous improvement had a moderate level and a significant positive relationship.
Sperandio & Kong, 2018	United Kingdom, United States, Canada, Mexico, China and Africa	This article explores the impact of external agencies on the establishment of PLC communities.	PLC development efforts suggest schools need external links to succeed, less attention is given to organizations that voluntarily provide programs developed through PLC features.	Qualitative (Focus group discussion)	The results show that external agencies can foster the development of PLCs within schools and facilitate the difficult process for schools operating separately.
Hutchison &	United States	The purpose of this study was	Many schools in most countries	Mixed method	The results showed that students in

Woodward, 2018		to examine how teachers' planning and teaching, as well as their perceptions of their competence in technology integration changed when they participated in a technology-focused professional development model	use rules that require students to engage with digital tools. Therefore, a model that supports the construction of teacher knowledge in the classroom is needed. However, the implementation period of professional development models aimed at supporting technology integration efforts is short and non-contextual.	study (pre- and post-test comparisons, daily diaries, classroom observations, interviews, and field notes)	classrooms with teachers who were study participants had significantly better in digital literacy assessment.
Datnow, 2018	United States	The purpose of this paper is to examine the intersection of teacher emotions, teacher collaboration and educational reform, in particular, with respect to time, a key teacher resource that is often influenced in school change.	Many policies and reform efforts are undertaken without paying attention to the emotional changes experienced by teachers. In the world of research, there is increasing attention given to the importance of emotions in educational change. However, many researchers have argued that this matter is still poorly studied.	Qualitative (Interview and observation)	Teachers in both schools have benefited from a collaborative school structure that allows time and space to innovate and bring joy to their professional lives.
Lee & Lee, 2018	Singapore	Review whether PLCs are changing teaching practices.	Although past research has found that the practice of reflective dialogue strongly influences transformational teaching change, agencies in	Mixed (Survey and observation)	These findings illustrate that in the context of Singapore's hierarchical culture, teachers participating in PLCs with high professional capital demonstrate transformational practices.

Singapore do not state this practice as an important trait.

Avidov-Ungar, 2019	Israel	The purpose of this paper is to focus on PLC conducted by teachers to achieve continuous professional development and higher student achievement. This paper examines principals' perceptions of how PLC influence teachers, teacher learning and school development processes, and their own involvement in PLC.	Principals hold formal responsibility for professional development (PD) for school staff through the implementation of PD. However, principals did not receive detailed guidance on mobilizing PLC to evaluate its effectiveness.	Qualitative (Semi-structured interview)	One principal described involvement in PLC as exhausting. Other participants raised the issue of time constraints in as a challenge in implementing PLC. They also mentioned the need to make time for teacher-leaders or for principal-teacher-leader meetings but did not focus specifically on program costs.
Rickard & Walsh, 2019	Ireland	The main goal of this paper is to present the rationale of a team-teaching research project conducted between the Department of Education at Maynooth University and several partner schools.	Team teaching by new teachers with experienced teachers as an approach to school development. However, existing practices do not meet the characteristics of a team-teaching approach.	Mixed method	The findings show that the involvement of teachers is positive that they work together through the process. This is related to the positive nature that they consider themselves to be professional students and help their students' learning. Moreover, the data show that both new teachers and experienced teachers work together using the space provided to examine their practice. Challenges are also faced especially time

					constraints in planning and reflection.
Yang, Liu & Gardella (2020)	United States	This study explores the various outcomes of PLC through teacher improvement in knowledge and practice and how changes in teacher performance affect students' beliefs and ultimately, their understanding of science concepts.	Although several relationships from PLC to student science learning outcomes have been studied, for example how PLC influences teachers' pedagogical content knowledge and then influences student learning outcomes, the relationship between teachers' knowledge involving science subjects and students' understanding of science concepts has not been explored.	Qualitative (Survey)	The relationship between PLC and assessment of pedagogical knowledge is closely related to the duration of the PLC program. The level of knowledge of teachers' pedagogical content was positively correlated with participation in PLC. However, teachers' classroom practices in terms of support in science inquiries and attitudes/expectations of student work outcomes did not show a direct relationship with PLC interventions. Furthermore, the overall hours of the PLC program were positively related to student comprehension. A significant improvement was found at the point of 150 hours per year, thus supporting the idea that a number of PLC programs were needed to show an impact on student achievement.
Tahir & Musah, 2020	Malaysia	This study examines whether teachers in rural primary schools are satisfied with the implementation of PLC and its suitability in rural environments.	PLC has been implemented in secondary schools in Malaysia. However, to date, it cannot be ascertained whether rural primary school teachers in Malaysia are satisfied or not	Mixed method (Survey and interviews)	The findings revealed that primary school teachers in rural areas were satisfied with the implementation of PLC. They consider the benefits of the program as part of its effectiveness on professional development. In addition, the existence of a teacher teamwork

related to the implementation of PLC. Second, there is limited information on the challenges and obstacles in the implementation of PLC in rural Malaysian primary schools. PLC studies are poorly researched and not known empirically in Malaysia.

culture and the ability of the program to support the learning process were also noted. PLC is also regarded as an effective knowledge sharing platform. The findings also revealed several challenges such as lack of time, negative attitude of teachers and financial constraints hindering the implementation of PLC in rural primary schools.

Lund, 2020	Denmark	This article shows that teachers are able to reflect on their own practice while teachers can collaborate with their colleagues in conducting the inquiry process in the classroom.	Teachers should engage in a process of practice inquiry that emphasizes the importance of observation. This should help teachers to improve and enhance their teaching. Teachers can certainly learn about pedagogy and learning theoretically, as well as anything related to their subject by attending various courses. But the ability to transfer this knowledge into the classroom depends on the way that knowledge is received.	Qualitative (field notes, semi-structured interviews and document analysis)	These findings illustrate how teacher reflection, pedagogical knowledge, and teacher perspectives can be developed through in-service teacher training. The progress they achieve can be placed in two categories: (1) changes in their actions while teaching and the way they think about their teaching; and (2) changes in the way they learn from PLC.
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Discussion

Challenges in PLC Implementation

PLC do not exist naturally in schools. Previous studies have identified two requirements to nurturing and maintaining PLC, which are school leadership and trust among school members (Yin & Zheng, 2018). Regardless of whether the school is under government or private administration, there should be no formal rules for schools to follow on how to cooperate between teachers (Vanblaere & Devos, 2018). A study related to the implementation of PLC among teachers in Germany found that the effect of PLC implementation in improving teachers' self-efficacy was very low. In particular, they identify the professional development opportunities provided by for them are limited and this constrains them to develop their professionalism (Brake & Kelly, 2019).

Teacher Motivation

Heggen's (2018) study with his colleagues shows that the main challenge in developing a school as a professional learning community is that school administrators and teacher colleagues are not committed in in the implementation of PLC. Teachers are passive during the PLC program (Chua et al., 2020). Moreover, teachers are already too comfortable to remain in their current state and it is difficult for them to accept PLC (Kin & Kareem, 2021). Teachers are not ready to engage in PLC activities and try new ideas (Marynowski et al., 2021).

Teachers are not motivated to grow professionally (Amirova, 2020). Furthermore, teachers do not have a close relationship between one another. There was also a study conducted among rural primary school teachers which found that although teachers seemed committed to implementing PLC as part of their knowledge sharing sessions, there were teachers who showed a negative attitude towards the idea (Tahir & Musah, 2020). Therefore, important issues need to be seriously considered to develop the school as a professional learning community (Heggen et al., 2018).

If senior teachers are aware that they are being watched because of some unique quality in themselves and the purpose of junior teachers observing them is to learn, the culture can certainly change (Mohan et al., 2019). However, some teachers are hesitant to share their material with other teachers for fear of being criticized (Tayag, 2020). There are also teachers who feel uncomfortable when their learning style is recorded and discussed (Lee & Tan, 2020).

Among other things, promotion-related challenges are also a reason to why teachers are hesitant to share ideas and materials during learning sessions due to their concern that other teachers may take these ideas and use them for their own positions and promotions (i.e., advancements) (Tayag, 2020).

School Administrator Support

Strong professional learning requires ongoing commitment and support (Cherkowski & Schnellert, 2018; Avidov-Ungar & Ezran, 2020; Amirova, 2020; Chua et al., 2020). People in school believe that school culture can change through support from administrators (Mohan et al., 2019). Teachers experience power differences in defining the form, function and outcome of PLCs (Lee & Lee, 2018). Meanwhile, teachers have authority over their teaching and learning, where support is needed to encourage asking questions, making actionable plans, implementing, reviewing, and adapting those plans in ways that can lead to better educational outcomes for students besides developing their teaching practices. Most

teachers are positive about sharing with colleagues, but they have little opportunity to experience this environment.

Teachers believe that if they have more opportunities to engage in this partnership practice, they can be better teachers (Mohan et al., 2019). Furthermore, professional learning is said to be effective when the program conducted gives teachers the opportunity to test the learning they have acquired in the classroom, act and provide feedback. Thus the effectiveness of professional learning is not only achieved from traditional professional development programs such as seminars, conferences, and workshops (Aslamiah et al., 2019).

Teacher Workload

In addition, the pressure felt by teachers is hampering the implementation of PLC (Datnow, 2018; Avidov-Ungar & Ezran, 2020; Tahir & Musah, 2020; Tayag, 2020; Amirova, 2020; Chua et al., 2020; Schaap, Louws, Meirink, Oolbekkink-Marchand, Van Der Want, Zuiker, Zwart & Meijer 2019; Marynowski et al., 2021). Although teachers in a team are satisfied with PLC implementation, there are times when new instructions or outside initiatives can cause them to be in distress (Datnow, 2018). Teachers value their time together but experience frustration when their time together is limited. In some cases, their time together has been allocated to other school activities clustered at certain times throughout the year.

Teachers also argued that instead of spending time for PLC meetings or being considered by them as these meetings, teachers will choose to use their time to prepare teaching materials, evaluate student performance, and perform student mentoring (J. R. Tayag, 2020).

Time, Place, and Financial Constraints

Among others, time and place constraints are also challenges in PLC implementation (Avidov-Ungar & Ezran, 2020; Amirova, 2020; Wan, 2020). This refers to the time constraint to execute any planning. It is difficult to gather all teachers in an agreed time. Thus, PLC activities become hasty and ineffective (Amirova, 2020).

The most frequently mentioned barriers to the success of team teaching in schools are related to planning time, schedule, and even time to hold activities in the lesson. In addition to time and place constraints, lack of budget and financial constraints are also obstacles in realizing some PLC programs even though it is known that such programs can motivate and enhance the teaching and learning capabilities of the teachers (Avidov-Ungar & Ezran, 2020).

Doubts over the Stability of PLC Implementation

In addition, teachers in this study expressed doubts about the stability of PLC policy that they have a perception that the implementation of PLC policy is short term. PLC is perceived by teachers as something created by outsiders for them and not something that teachers can take advantage of (Wal, 2020). Thus, they do not care about the actions or strategies contained in the PLC that should be practiced (Prabjandee, 2019).

Therefore, teachers were less interested in taking advantage of the implementation of PLC when they felt that these learning sessions were not relevant to the activities performed in those sessions. For example, PLC activity sessions are often used to simply carry out instructions from the ministry or department (Tayag, 2020).

In addition, they consider the PLC activities carried out are useless and will not be monitored for implementation (Chua et al., 2020).

Development of Innovation in PLC Implementation

PLC is a space for teachers to work collaboratively in gaining knowledge and best practices that can enhance their level of professionalism (Lee & Lee, 2018). Studies conducted among rural primary school teachers reflect that after the implementation of PLC, they can increase their capacity as educators in initiating best practices for student excellence (Tahir & Musah, 2020). PLC also encourages teachers to push their thinking and practice forward, focus on the needs of students, and ultimately, to grow (Sperandio & Kong, 2018).

Findings show the important role of PLC in educational change is when PLC can stimulate professional development that focuses on practices such as consultation, information exchange and collective decision-making and this activity is an approach that can realize change in practice teaching. Therefore, PLC activities provide opportunities and space for teachers to innovate (Datnow, 2018). For example, through lesson study activities, teachers are collectively involved in an inquiry process that begins with questions and problems posed by teachers about teaching and learning. They develop hypotheses in the form of lesson plans and then test the hypotheses by teaching and observing their teaching. Then, they would analyze the teaching results and generate new knowledge. Through the transfer of information presented from the facilitator to the teacher, this scientific teaching and learning research allows teachers to create new knowledge (Lewis & Potts, 2019).

The implementation of PLC indirectly instills a culture of innovation among teachers when its implementation is not limited to an activity or a program. This means that teachers can also make improvements in the said activity or program (Lee, 2020). PLC are also positively related to the innovation climate of PLC implementation and make a positive contribution to the innovation climate (Parlar et al., 2020). Teachers are able to build knowledge, apply new practices, and evaluate the results of these practices when they have the opportunity to ask questions through a cycle of reflective practice to solve common problems related to their work. The cycle of reflective practice helps teachers achieve interaction between the three elements of community inquiry which are cognitive, social and teaching. As a result of this interaction, the level of teacher learning increased in the PLC (Alzayed & Alabdulkareem, 2021).

In addition to fostering a collaborative culture among teachers, the focus given to professional discourse makes their time more productive thus leading to improvements in teaching and the confidence needed to implement such improvements (Carpenter & Munshower, 2020). There are studies done that when teachers are exposed to observation and observed by both peers and trainee teachers, they gain an innovative form of pedagogical awareness in terms of their own practice (Lund, 2020). This study strengthens the idea that knowledge generation can be done through the practice of exploring the actual level of teacher involvement in PLC (Alzayed & Alabdulkareem, 2021).

With the development of innovations that can be fostered through the implementation of PLC, schools should provide ample opportunities for teachers to engage in the provision of collective lessons, classroom observation and collaborative learning that are beneficial for the construction of communication and information flow in schools. Thus, PLC can promote innovative ideas generated and implemented by teachers in schools (Liu et al., 2022).

Competency Enhancement in PLC Implementation

PLC is reported to have a very positive impact on school staff development and student learning (Gruber, 2019). Through the implementation of PLC, teachers use classroom management strategies in an organized manner, they create a student-oriented classroom climate that supports and implements learning with challenging content. Activities in PLC provide an opportunity for teachers to think about and analyze certain aspects that occur in the classroom and things that students learn to enable teachers to improve their teaching. When teachers gather regularly and discuss their opinions reflectively, this situation is called a professional dialogue formed for teachers to review their teaching (Doğan & Yurtseven, 2018).

In addition, there are studies that have been done and describe how the effects of PLC can ultimately benefit student learning outcomes. According to records, a number of PLC are needed each year to have a positive impact on students (Yang et al., 2020). In addition, it is reported that PLC can increase the capacity of teachers, whereby PLC can influence teachers to improve their own professionalism and reflect on the teaching and learning that had been carried out (Avidov-Ungar & Ezran, 2020). Team teaching is seen to have improved teaching through the improvement of classroom management, further in terms of improving student behavior. This relationship is enhanced to help teachers recognize the student's abilities (Rickard & Walsh, 2019).

With the implementation of PLC, schools can provide initiatives and platforms for teachers to increase their spirit of cooperation and their commitment to student academic achievement (Tahir & Musah, 2020). Working in teams also helps teachers think critically about how to develop content knowledge and communication skills with students. In addition, PLC develop teachers' beliefs about teaching and learning that guide them in decision-making, teaching behaviors and interactions with students. Beliefs shape curriculum planning and decisions determine what they should teach and the teaching steps they should follow (Sang et al., 2021).

In addition, the existence of relevant school data and competency development can support professional self assessment (Qvortrup, 2019). PLC activities provide a space and structure for new or less experienced teachers to engage in collaborative reflection and encourage each other to think critically about themselves, their school, the education system and subsequently redesign issues that arise (Behizadeh et al., 2019).

Effective PLCs lead to teacher teaching behaviors and have great potential to be applied in teaching and learning situations (Suherman et al., 2020). Collaboration in PLC has also contributed to professional development among teachers. Mentors are seen as an element of professional development that acts as a learning agent that will produce positive changes to teaching practice. In addition, mentors are involved in professional development because they also learn from the things their protégés bring in the partnership (Walters et al., 2020). Aspects of success related to the value of sharing and learning from colleagues depend on the benefits derived from collaboration in teamwork. Teachers focus specifically on action research conducted by team members who teach the same class but in different subjects (Lund, 2020).

There are studies conducted showing that collaborative work supports teachers' knowledge and appreciation for subject content development and teachers are satisfied with the way PLC support their professional growth towards leadership in their schools (Gunning et al., 2020). Teachers who implement leadership through changes in their practices in the classroom have a positive impact on teachers, for instance they are able to rethink their

teaching practices, attitudes towards students and their learning and their professional level (Khokhotva & Albizuri, 2020). There are also research findings that suggest that key components of PLC should include elements of collective focus on student learning, reflective dialogue, and shared and supported leadership because they have a significant and positive relationship with teachers' level of professional practice (Wan, 2020).

Through the implementation of PLC, some teachers began to question their current competencies and successfully reviewed their attitudes and beliefs (Alhanachi et al., 2021). Thus, this contributes to the knowledge building of the participating teachers. Furthermore, their relationship becomes close in the context of education and its impact can be seen on student learning and achievement. In this regard, PLC activities can have a positive effect on improving the content knowledge of a subject. Their participation in the PLC provided has enhanced their knowledge of five related domains, namely, scientific content knowledge, educational purpose knowledge, curriculum knowledge, teaching practice knowledge, and educational context knowledge (ALRwaythi & AL-Otaibi, 2020).

Interaction among teachers can be a form of collegiate social control over teaching attitudes (Park et al., 2019). The cooperation of teachers and the time allocated to review and scrutinize their teaching encourage small changes in teacher practice in line with instructions from the ministry. There is a need to implement a movement from a top-down professional learning program to a more collaborative approach to teacher education when the goal is to address reform-driven educational change (Dastgahian & Scull, 2021). The findings prove that PLC can support teachers to develop and maintain inclusive practices in the long run through continuous change in individual and collaborative practices of teachers (Brennan & King, 2021).

PLC is able to promote the nature of leadership in a teacher which in turn has a high positive correlation to the teacher's focus to improve student learning (Lee & Ip, 2021). Moreover, PLC can help teachers build knowledge and teaching strategies together, making it an effective method for the improvement of subject content knowledge and collective knowledge (Vossen et al., 2020).

Conclusion

In a school, a teacher becomes a measure or guideline to his students, while in a community, a teacher becomes a standard or model for every member of society. In the education profession, especially in the field of teaching, the quality of learning processes and outcomes reflects a teacher's professionalism. The presence of teachers in the learning process has an important role. The role of the teacher cannot be replaced by technology, such as radio, television, internet, computer, or even any type of latest technology but requires human elements, such as attitudes, value systems, feelings, levels of motivation, and exemplary behaviors. The results of the learning process cannot be achieved except through educators. How important the role of the teacher is and how difficult the duties and responsibilities of the teacher, especially the moral responsibility is to be held and emulated.

Effective PLC is essential to support and develop the practice and identity formation of teachers, especially new teachers. PLC have been recognized globally for two main reasons. First, there is ample evidence that teachers who practice effective PLC can improve classroom teaching and in turn improve student achievement. Second, creating PLC in schools has the potential to enhance school culture and strengthen schools' capacity for organizational learning. In recent publications, teacher collaboration has been widely regarded as an

effective tool for the professional development of teachers, students, and school improvement in general (Vanblaere & Devos, 2018).

While there are various challenges in the implementation of PLC, this is where the important role of school leaders lies in mobilizing school functions (Vanblaere & Devos, 2018). In most cases, school principals or school administrators who create values of cooperation and togetherness carry the implicit norm that everyone should be involved in improving school functioning. In addition, it is important that a clear vision needs to be emphasized so that school staff collectively can achieve more success as a team than individually.

Through the implementation of PLC, teaching interaction and assignment evaluation require teachers to process content in depth and meaningfully and this can address problems that arise during teaching (Warwas & Helm, 2018). Furthermore, the classroom environment is more appreciative, supportive, and friendly than in schools with low levels of PLC activity. There are also studies that confirm that when schools create policies and structures to encourage collaboration, teachers will have more opportunities to engage in practice and teacher leadership potential will emerge (Lin et al., 2018). Although improvements in educational quality and effectiveness reflect the main objectives of PLC, strong evidence of how participation in PLC can influence the classroom is sparse and obtained from previous studies.

School administrators should identify, train and support motivated teacher leaders to develop PLC in schools. This is because teachers are members of the organization which is the most active school that is believed to be open with a learning environment (Woolway et al., 2019). For smaller departments that only have one or two teachers and collaboration within the department is limited, expertise from outside the organization may be an option if the school has good relationships with outside parties. There are studies that confirm that schools need a culture that supports all staff working and learning together to enhance teacher learning. This requires the role of school administrators and heads of departments to create a culture and learning structure that encourage teacher participation (Mohan et al., 2019).

Competency development should focus on professional teams, rather than on individual teachers as an important unit. This development should also be documented for the reference of other teachers. However, it has yet to be optimally documented either through the use of data that competency development and implementation of PLC in general have a positive impact on teaching assessment and student well-being at least in the short term (Qvortrup, 2019).

It is the role of school leaders to enhance and ensure that PLC programs are used effectively to increase the level of teacher professionalism. Supervisors and administrators should also limit teachers' workloads and unnecessary repetitive documentation work to improve teachers' internal guidance, coaching and induction programs in an effort to enhance teachers' capabilities in teaching and learning.

Among others, the proposal to improve the implementation of PLC focuses on the provisions that need to be emphasized by schools to implement PLC as a professional development initiative among teachers. In overcoming these constraints, the top authorities in the field of education such as the Ministry of Education and the State Education Department should provide more financial support to schools as a way to improve the implementation of PLC in schools (Hassan et al., 2019). In line with this view, financial support is capable of creating effective PLC implementation (Tahir & Musah, 2020).

In addition, other PLC success factors that encourage PLC are school climate and good program management (Hassan et al., 2019). The core of teacher professional development is

not only focused on knowledge or acquisition of skills but also on building a culture of learning organization that has collaborative characteristics to improve student learning outcomes (Ghani et al., 2020). In essence, PLC policies will only be embedded in the school system if a culture of teacher collaboration is nurtured consistently among teachers.

As a teacher, the leadership element is the foundation of teacher agency development. Therefore, developing leadership among teachers at different levels is important in promoting teacher learning. Teachers are not only motivators in learning leadership, they also motivate colleagues with ideas, knowledge, and enthusiasm. Thus, this will expand existing efforts to drive improvement in teacher learning (Kin & Kareem, 2021). Teachers, with the help of their colleagues in the PLC, can engage in reflection on teaching, which is known as a benchmark of efficient teaching when they can identify methods to which a lesson can be improved (Zahedi et al., 2021).

Most of the findings of previous studies provide information to stakeholders related to teacher professional development training and guide the implementation of PLC in schools so that the quality of teacher teaching can be improved and thus, enhancing student learning performance. It is recommended that a more detailed implementation of PLC be considered in further studies, as its strategy and effectiveness still have not been sufficiently examined.

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