Challenges of Professional Learning Communities in Elementary Schools and Practices for Establishing it: Teachers' Point of view

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Abstract
The aim of this study was to investigate challenges of professional learning communities in elementary schools of Tehran province cities and to provide solutions for its establishment. This research is practical by purpose and mixed by methodology. The population included all 13064 people of elementary school teachers in the academic year of 2018-2019. In the quantitative part, based on Morgan table, the sample size of 370 people was selected by cluster multi-stage random sampling. In the qualitative section, 20 distinguished teachers were interviewed purposefully. "Professional Learning Community Assessment" questionnaire by Oliver et al. and a semi-structured open-ended answer questionnaire were used. The content and face validity of the quantitative questionnaire were assessed by five experts and validity of open-ended questionnaire was guaranteed by three methods of controlling misunderstandings of respondents' interventions by the researcher's long-term involvement with the research, external control of research by neutral supervisor and participant comments on findings and interpretations in a focus group. For the reliability of close-ended questionnaire, the acceptable value of Cronbach's alpha was 0.89 and in the open-ended questionnaire, the kappa agreement coefficient between the participants was 0.83. Findings showed the difference between the status of elementary schools in professional learning communities and the desired situation was significant and lower than the desired level, in all components. Based on the content analysis of interview questions, using the method of Corbin and Strauss, for the establishment of professional learning communities in schools, practical suggestions in three sections of teachers, principals and middle administrators were provided

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Introduction

The topic of "professional learning communities" (PLC) has received a lot of attention in the education literature in the last three decades by researchers, policy makers, educators, practitioners globally at various levels (Xin, Hongbiao & Yuan (2021). Attention to this issue began after the failure of education in the 1980s by pressuring educators to improve students' academic achievement. In the 1990s, educational reforms in curriculum planning, training, and educational evaluation were considered. That was despite the fact that the majority of education experts and policymakers warned that many teachers were not sufficiently prepared and trained to meet such expectations (Fullan, 1991; Garet, Porter, Desimone, Birmanand & Suk Yoon, 2001& National Staff Development Council, 2001).

Traditional models of professional development mainly focus on individual capacity building to become better teachers or leaders, which in most cases relied on the efforts of experts outside the school environment. These experts were specialists who dictated the necessary knowledge in the field of professional development in a segmented way to the educational staff in schools, including teachers, deputies and principals (Dufour & Eaker, 1998; Sparks& Hirsch, 1997). These efforts were based on the premise that people acquire new knowledge and skills and apply them in educational settings. As a result, schools will perform better because practitioners know what is needed and will do it better in schools. What was important and neglected, however, was that teachers and educators did not act individually, but rather they shared their perceptions, perceptions, and understandings of new strategies and innovations in a systematic manner. Ignoring such a connection can lead to the superficial idea that educational change will be implemented and consolidated by each individual at the school level, while the results of their implementation will fail in the following years (Dufour & Eaker, 1998, P. 106).

Since 2001, the New Curriculum Reform has advocated a shift from 'teacher-centered' and 'content-centered' to 'student-centered' approaches (Zhang and Wong 2018). Then, new approaches to professional development have evolved from short-term individual and generally non-organizational approaches to continuous learning approaches as part of routine activities with colleagues, including training, feedback, opportunities for individual reflection and further learning in group, school-based and participatory approaches, coaching practices, peer education, and teacher engagement with peers. These approaches, while considering teachers and educators as professionals and adult learners emphasize the promotion of student learning based on constructivist approaches (Gaspar, 2010). As the study of Alhanachi, A.L. de Meijer and E. Severiens (2021) has showed that participating in professional learning communities will result in joint work or shared practices and it respectively will improve culturally responsive teaching. Senge (1990) had pointed out that although individual mastery is an important requirement for organizational improvement, this learning alone cannot lead to organizational change and progress. Educational reform, from successful adaptations to unforeseen changes in any system, requires something more than just personal growth and that is focus on a team. Rogers (1995) also has indicated that innovations are disseminated in a system when people work in a comprehensive process, while learning from each other, not individually.

Despite the increasing efforts and costs in implementing educational reforms, unfortunately, in many cases, it can be seen that in practice, these reforms have failed. One of the main reasons for this failure is due to ignoring or underestimating the role of teachers in implementing educational improvement policies. On the other hand, recognizing the importance of the role of teachers alone cannot lead to educational improvement. The main problem that schools face is how to develop the professionalism of teachers in groups so that

they can take advantage of the benefits of the learning community. Benefits such as making connection among school staff, teachers, students, principals and teachers, making them more aware of schools' objectives and missions, better perception of conditions, environment, increasing the ability to lead and direct change, reducing academic failure and absence and leaving the job (Brandt 1992, p. 21) to improve the quality of education.

Although the discussion of PLC has not been practiced in Iranian schools more explicitly, but the professional development of teachers has always been one of the main concerns of our country's education system. In fact, the officials and administrators themselves are not aware of such a concept, but in practice, they seek to form it, although it does not refer to it as a professional learning community. But the important thing is that they do not know where and how PLCs' establishment should start properly. This study can provide a coherent framework and starting point for it by accurately describing and clarifying the necessary solutions to cope with challenges of PLCs from teachers' point of view and fulfill its successful establishment. Therefore, the results can be addressed to those who are responsible for professional development of teachers, as well as officials concerned with improving the quality of education and student achievement to aware them where and how to focus their efforts and resources, as well as helping to create the conditions needed to support and build PLCs in schools so that they can have the maximum impact on educational productivity.

Many researches have been done in this field since three resent decades, but in domestic research domain, there are limited studies that investigate PLCs in schools in practice. The one is the research has been done by Hattamian, Zeinabadi, Abdollahi and Abbasian, (2018) in elementary schools of Tehran cities to identify, design and test the antecedents pattern of the professional learning community. The results were antecedents in four dimensions of educational leadership, organizational culture, participatory learning and organizational structure with a communication pattern in a specific conceptual model. In the next phase, the present researcher decided to pursue and complete the related issue in the same population according to the demand of education office of Tehran province cities. Therefore, this demand based project aimed to investigate how the status of elementary schools of Tehran province cities was in terms of PLCs 'components. Then, based on this description, will be tried to find the necessary solutions to improve the current conditions to achieve PLCs in these schools.

Professional learning communities (PLCs)

The origin of PLC was by publishing Peter Senge's book "Five Principles" in 1990 and his description of learning organizations that encouraged organizational capabilities and creativity. In learning organization theory, he based learning not only on individual mastery but also on individual learning in the form of collective learning. Introducing the fifth discipline, entitled "Collective Learning", he states that inclusive organizations can not only transform themselves through collective discussion, but can also transform human knowledge and wisdom. In such an organization, people are constantly expanding their capacity to achieve the results they want, new patterns of thinking can be developed in them, there is collective enthusiasm, and in addition, people are constantly learning how to learn from each other (Senge, 2006, p. 3). Rogers (1995) considers the theory of "diffusion of innovation" to be the basis of the PLC. In this theory, learning is a collective matter and a situation in which the gained knowledge is collectively produced. Rogers argues that the dissemination of innovation takes place essentially in a social process in which the information received about a new idea is transferred from one mind to another, so that through this process of collective construction is gradually evolved and developed(p. Xii).

There is no universal definition of PLC; however, many educators have tried to define it in a variety of ways. Table 1 summarizes the most important definitions available from the review of literature.

Table 1: Summary of existing definitions of PLCs

Researcher /yea	Summary Definition
Tayag (2020)	PLCs are formed based on the rich experiences of teachers and encourage them to look carefully at context and develop the necessary interventions.
Qian & Walker (2021)	School principals play the most important role in the formation of PLCs, and in these communities, teachers achieve collective learning during their daily activities.
Antinluoma, Ilomäki, Lahti-Nuuttila & Toom (2018)	The main goal in forming PLCs is to improve the professional development and well-being of teachers so that it has a positive impact on student learning.
Vangrieken, Meredith, Packer, Kyndt (2017, p. 48).	PLCs 'hold promise in areas wherein traditional forms of professional development have fallen short'
Sukru Bellibas, Bulut & Gedik (2016)	Teachers and prominent people formed PLCs in schools, based on the specific shared insights within the culture of each school.
Sergiovanni (2009, p.)	PLC is a group of people who interact with face to face or virtually and connect with each other by pursuing common questions, problems or issues.
DuFour & DuFour (2010)	PLCs deal with issues such as mission, vision, collective commitment and common goals.
Dufour et al. (2008, p. 12)	In this community, educators collectively work through ongoing processes such as collective and collaborative research as well as action research to achieve better results for the students they serve.

As you can see in Table 1, many experts have described PLCs and have developed dimensions and components to explain its features, but, what they all have agreed on it, is that it is referred to as an effective strategy for improving the quality of education. A synthesis of the literature (Hord, 2009, Nkengbeza, 2014, Lee and Kim 2016, Nkengbeza, & Heystek , 2017, Itumeleng, 2020, Qian & Walker, 2021, Admiraal, Schenke, De Jong, Emmelot, & Sligte, 2021) suggests PLCs generally have five main characteristics:

1. Common vision and values. Members of PLCs share the vision and mission of the school.

2. Supportive situations. They are usually in the form of physical conditions, like time and place to meet and talk, including the willingness to receive feedback and work towards improvement.

3. Collaborative creativity. The practice of promoting exchange of ideas and knowledge between teachers are beyond simply sharing information.

4. Personal shared practices. There is open sharing of classroom management, pedagogical approaches and teaching practices through formal/informal exchanges of feedback.

5. Supportive and distributive leadership. The principal is at the center of every PLC. In order to develop and sustain a school as a professional learning community, he/she must share power, authority and decision making among all the stakeholders in the school.

The following is a selection of the most relevant domestic and International research on this topic;

Hattamian, Zeinabadi, Abdollahi and Abbasian, (2018) have done a research in elementary schools of Tehran cities to identify, design and test the antecedents pattern of the professional learning community. The result of this study was a model of antecedents for PLC in four dimensions of educational leadership, organizational culture,

participatory learning and organizational structure with a communication pattern in a specific conceptual model.

Mirahmadi, Khorasani, Abolghasemi and Mehri (2019) conducted a descriptive study to investigate the effect of PLCs on the self-efficacy of male secondary school teachers in Saveh. The results of their research showed that PLCs had an effect on teachers' sense of self-efficacy in all its components. In addition, among components of PLCs, the supportive conditions of relationships and the supportive conditions of structures had the greatest impact on teachers' self-efficacy.

Hosseinpour Toulazdehi, Zeinabadi, Abdollahi and Abbasian (2017) in a qualitative research among experts, with the aim of identifying the dimensions and indicators of research-based PLCs in school and determining the requirements for its creation, introduced indicators of PLCs. The results showed five dimensions of shared values and beliefs, professional learning teacher, professional conversations and collaborations, collective learning and finally communications and interactions. Also, based on their results, the implications for creating research-based PLCs in school were believing in the role of research and its importance in the teaching and learning process, focusing on collective learning, strengthening professional dialogues between teachers and administrative staffs, supportive principal interaction, and continuous communication with scientific centers.

Tayag (2020) conducted a qualitative study among 40 teachers and 24 principals from 4 different schools, examining the experiences of secondary school principals and teachers in implementing PLCs. They identified four major challenges that teachers and principals experienced in implementing PLCs, which included high workload and time conflicts, trust peer teachers, conflicts with promotion and ranking plans, and failure to appreciate participants in the implementation. According to them, all of these

challenges were rooted school culture and operations.

Antinluoma, Ilomäki, Lahti-Nuuttila & Toom (2018) in a survey study examined the level of maturity of thirteen Finnish schools as PLCs in terms of school culture, education leadership and professional development. Their findings showed that a culture of collectivism, trust, and commitment were common strengths among all schools. In these schools, school culture supported professional collaboration and teachers had necessary knowledge, skills and requirements for participating in professional communities. They attributed the differences of these schools to their different operational and organizational characteristics, which divided them into three categories.

Increasing number of studies were done to design, identify or explore models and indicators for PLC as well as proving PLC benefits for schools. The current study did not conduct to develop any model of PLC or even to grant its benefits. The present researcher had been teacher for many years in schools. Since she believes, the teachers are the main agent of any change in schools, so for successful establishment of PLC it is necessary to hear teachers' voice in practice. In this reason, it is time to come in schools where teachers face challenges to PLC establishment in practice to provide necessary solutions.

Research questions

1: How is the status of elementary schools of Tehran province cities in terms of PLCs' components compared to the desired status?

2- What are the necessary practices to improve the current conditions of these schools to achieve PLCs?

Methodology

This research, in terms of purpose, is an applied research and in terms of data collecting, has a mixed research design that was done using a mixed model. In terms of its philosophical framework and paradigm is more post-positivist paradigm to

17

ensure the data and their analyses are a true reflection of current events. Therefore, after examining the status of PLCs' components in elementary schools of Tehran province cities, the researcher analyzed the qualitative data obtained from semi-structured interviews with distinguished teachers participating in the statistical sample, then, based on qualitative findings, provided practices to improve the current conditions of these schools to achieve PLCs.

Since teachers are the main agents of PLCs' implementation in schools and their point of view will reveal real challenges in practice to have PLCs in schools, the statistical population in this study concentrates on all teachers working in elementary schools of Tehran province cities in the academic year of 2018-2019, in the number of 13064 people. Using Morgan's table, the sample size in the quantitative part of the research was determined and by 370 people was selected by stratified random cluster sampling. At last, 342 answered questionnaires were collected. In the qualitative section, 20 teachers who distinguished as successful teachers in the last two years were interviewed in a targeted manner. Distinguished teachers were teachers who were introduced by their principal or co-workers in a snowball process. They had effective background on participating in action research, lesson study, extracurricular school programs, holding academic students' competitions, and in some cases even teaching in-service teacher courses.

Data collection method is a combination of quantitative and qualitative methods. "Professional Learning Community Measurement" questionnaire by Oliver et al. (2009) was used in a quantitative part. This questionnaire is based on five components proposed by Hord (2008) for PLC. This questionnaire has 5 components and 52 items. Components include; 1- supportive and distributive leadership 2- collective creativity 3- common values and vision 4- creating and expanding supportive situations and conditions 5- personal Shared practices. Respondents based on the four-point Likert scale should indicate one of the numbers one to four, respectively; choose to strongly agree, agree, disagree or strongly disagree. In the qualitative section, in order to be aware of the views on appropriate solutions for establishing PLCs in schools, interviews with 20 distinguished teachers, through semi-structured open-ended questions, were conducted.

To assess the validity of quantitative questionnaire, the content and face validity of it were assessed by five educational science experts. For ensuring the validity of semi-structured open-ended questions, three methods were used to assess the results of the interview analyses in terms of validity. First, the researcher's long-term engagement with the research environment, by her constant observations in the research environment, as well as the researcher's previous familiarity with the culture of elementary schools of Tehran province cities, where she had previously been a teacher, helped build trust with participants to control misunderstandings. Second, the external control of the research through the judgment of a third person who was the project supervisor. Third, by receiving the opinion of the participants in the research about the findings and interpretations in a focus group.

To measure the reliability of the quantitative questionnaire, a small number of 50 items were distributed in the statistical sample to response and the initial Cronbach's alpha value was 0.92. In the open-ended questionnaire of interviews, the kappa agreement coefficient between the participants was used, and amount calculated of 0.83 indicated an acceptable agreement.

Findings

Kolmogorov-Smirnov test was used to evaluate the normality of data distribution. The results showed that the data were abnormal. Therefore, non-parametric tests were used to test the first question. To answer the second question, the content analysis method by Corbin and Strauss (1990) was used.

Question 1: 1: How is the status of elementary schools of Tehran province cities in terms of PLCs' components compared to the desired status?

In order to examine this question, the nonparametric Wilcoxon test with a hypothetical optimum mean of 70 (based on previous studies) has been used. Table 2 shows the results of this test.

Table 2: Summary of Wilcoxon test: status of elementary schools Tehran province cities in PLCs' components

Hypothetical Zero Hypothesis: The average status of PLCs' components in schools is equal to the hypothetical desired average of 70.				
Hypothetical average	Average observed	difference	Sig.	Total number
70	39	31	0.00	342

Decision: Reject the statistical null hypothesis

As shown in Table 5; considering that the significance number obtained is 0.00, which is smaller than the significance number of 0.05 at the 95% confidence level, the null hypothesis is rejected and the research hypothesis is confirmed. Thus, the observed mean difference between the current status of teachers' PLCs of elementary schools of Tehran province cities and the desired status is significant.

To examine the status of each component of PLC (participatory leadership, shared vision, collaborative learning, shared individual practices, and status of supportive relationships) in schools compared with desired status, the non-parametric Wilcoxon test with a hypothetical desired mean of 15 (based on previous studies) has been used. Table 6 shows the results of these tests.

Table 3: Summary of Wilcoxon test: Current status of schools in PLCs' components

Component	Observed Mean	Compared Observed Mean	Sig.	Decision
Participatory Leadership	8.36	7.64	0.00	Rejecting Statistical Zero Hypothesis
Common Vision	7.76	8.34	0.00	Rejecting Statistical Zero Hypothesis
Collaborative Learning	7.44	8.56	0.00	Rejection statistical zero hypothesis
Individual Shared Practices	8.5	7.5	0.00	Rejection statistical zero hypothesis
Supportive Conditions and Relationships	7.52	8.48	0.00	Rejection statistical zero hypothesis

Hypothetical average 15
at 95% confidence level
Total number: 342

As shown in Table 3; considering the significance number obtained is equal to 0.00 which is less than the significance number 0.05 at the 95% confidence level, all differences between the observed means and the hypothetical mean of 15 are significant. Thus, in all components of PLC (participatory leadership, shared vision, participatory learning, shared individual practices, and status of supportive relationships and relationships), the difference between the current status and desired one are significant.

Question 2: 2- What are the necessary practices to improve the current conditions of these schools to achieve PLCs?

To answer this main question, 20 distinguished teachers in schools of Tehran province cities were deeply interviewed individually by 5 open-ended questions. To analyze the answers, content analysis by Corbin and Strauss (1990) was used in three

steps of Open coding (Interrelated Topic Categories), Axial Coding and (Main Category) selective Coding.

Analysis of the first interview question: What is your suggestion on how to hold educational decision-making sessions at school?

By analyzing the content, firstly, the main points in the answers were arranged in the form of important sentences, at second, each sentence was summarized in the form of key phrases, and then in the next step, similar items are categorized in the same axes. Finally, 27 extracted points were classified into four main categories (Table 4).

Table 4: Open, axial, and selective codes in response to how to held educational decision-making sessions at school

selective Coding	Axial Coding (Main Category)	Open coding (Interrelated Topic Categories)
Holding educational decision-making sessions at school	The structure of the decision making session	1. Participation of teachers from other schools 2. Invite external experts (mainly academics) to decision-making sessions 3. Invite experienced retired teachers to decision-making sessions 4. Organizing sessions both on a single grade and jointly with all grades periodically 5. The principal does not attend the session of the teachers' council and the representative of the council informs the principal 6. Organizing sessions focusing on a curriculum with teachers in the same grade 7. Holding polar sessions with the presence of some members of other schools 8. Two-stage decision: first in the teachers' council, then in the school council 9. Decisions in the Teachers' Council and the prohibition of veto by the principal alone 10. The teachers' council is the main directing of decisions 11. Decisions based on the vote of the majority of teachers and not on the orders of the principal or school principal
	Procedures before decision making session	12. Determining sufficient time for the session 13. Schedule the topics that will be discussed 14. Holding a session when the maximum presence of teachers is possible 15. Informing about the subject of the session and the date of its holding
	Procedures for the decision making process in session	16. Decision-making by majority vote, not by order of the school administrator or principal 17. Re-finalization of teachers after the agreed decision 18. Collecting comments and suggestions of the session in the fund in secret 19. Making decisions based on group performance 20. Failure to make a decision in practice by one or more specific people in the session 21. Provide a space for teachers to express themselves easily 22. Signing the decision minutes by all participating members 23. Decide according to the limitations of the school and the ability of teachers 24. Determining the goals of the session by the principal and determining the procedures by the teachers
	Procedures after the decision making session	25. Considering the executive guarantee for the taken decisions 26. Determining the procedures for following up implementation of decisions 27. Installing summary reports of previous sessions on the teachers' board for absentees 28. Consider encouragement to attend sessions and implementing decisions

As can be seen in Table 4, suggestions on how to hold educational decision-making sessions in schools were categorized in four axes of; the structure of the decision-making session, procedures for before, within and after decision making process of sessions.

Analysis of the second question of the interview: In what subjects do you share your experiences among colleagues at school?

Based on the analysis of the content of the answers to this question, 40 points were extracted which were classified into six categories and in the final stage, common axes were identified using axial coding for each of the categories of the previous stage (Table 5).

Table 5: Open, axial, and selective codes in response to the kinds of subjects for sharing experiences at school

selective Coding	Axial Coding (Main Category)	Open coding (Interrelated Topic Categories)
Subjects of Teachers' Sharing Experiences at School	Curriculum learning topics	1. Textbook Budgeting 2. Teaching math lessons 3. Teaching science 4. Teaching integrated courses 5. Fixed teaching shortcomings 7. Teaching methods 8. How to teach creatively
	Extracurricular activities	9. Holding simultaneous exams among different classes of a grade 10. Designing extra activities with the cooperation of other peer teachers according to the interests and abilities of students
	Educational activities in school	11. informing about students' hygiene and health issues 12. How to help weak students 13. In the field of academic failure 14. Using teaching aid materials
	Psychological and learning issues	15. Behavior with students 16. Motivate students 17. How to give confidence to the students 18. In the field of students' disciplinary issues 19. Ways to encourage and punish students 20. Dealing with aggressive students 21. How to deal with hyperactive students 22. Skills for better communication with students 23. Designing incentive plans for students 24. Grouping students for cooperative learning 25. Turning jealousy among students into constructive competition and friendship 26. Eliminate anxiety
	Individual Professional Development Programs	27. Action research 28. Conducting research on educational issues 29. Lesson study 30. Using information technology in teaching 31. Mastery on using of computers 32. Software learning 33. Producing electronic content 35. Learning educational design
	Methods of evaluating learning outcomes	36. Designing quiz, test and examination 37. Students 'portfolios 38. Designing creative homework 39. Descriptive evaluation 40. Assessing students' homework

As can be seen in Table 5, the most common shared experiences among teachers were; Curriculum topics, extracurricular activities, educational activities in school, psychological and learning issues, curriculum Individual professional development, and methods of evaluating learning outcomes.

Analysis of the third interview question: In your school, what kinds of opportunities are there to exchange information and get feedback from colleagues? (Mentioning cases)

Based on the content analysis, 17 points were extracted and classified into five main categories (Table 6).

Table 6: Open, axial, and selective codes in response to information exchange opportunities and feedback from colleagues

selective Coding	Axial Coding (Main Category)	Open coding (Interrelated Topic Categories)
Opportunities to exchange information and get feedback from colleagues	Formal scheduled sessions	1. Holding training workshops 2. In-service training classes 3. Teachers' Council sessions 4. technical sessions in each grade 5. Lesson study sessions
	In-school breaks	6. Breakfast time 7. Before students arrival from morning program 8. break time between classes
	Request from a colleague	9. Commenting on the peer evaluation from the students' portfolios 10.Commenting on the colleagues lesson plans 11. Consulting about homework given to students on holidays 12. Visiting colleagues 'classrooms and coaching them if needed
	In group common programs	13. Jointing in group educational programs 14. Jointing in programs with neighboring schools 15. When participating in school projects
	Out-of-school breaks	16. Through social medias 17. Phone calls with colleagues

As can be seen in Table 6, opportunities for exchange and feedback among colleagues were categorized in five main axles; formal scheduled sessions, in-school breaks, in common group programs and on-demand requests from colleagues, and out-of-school breaks.

Analysis of the fourth interview question: In your opinion, what are the obstacles to have PLC in your school?

The answers to this question were extracted 42 points and classified into five main categories, and in the next stage, using axial coding for each of them, these categories were named (Table 7).

Table 7: Open, axial, and selective codes in response to barriers of PLC

Selected Code	Main Category (Axis Code)	Related Topic Categories (Open source)
Barriers of PLC in schools	Structural-administrative	1. Large numbers of students in the classrooms 2. Conveying top-down directives and lack of independence of school agents 3. Transmitting time-consuming and unnecessary communiques to the schools 4. Poor quality and inadequacy of teachers' performance evaluation system 5. High volume of textbooks in curriculum 6. Bureaucracy and high volume of recording unnecessary daily events in the official notebooks 7. Lack of attention to the educational needs of the teacher 8. Lack of database in school 9. Accelerated decision-making system in schools 10. Lack of special time allocation to have PLC in school 11. The teacher's field of study is unrelated to the course she/he teaches 12. Quantitative annual evaluation and negative competition between colleagues
	Executive	13. Lack of necessary and useful educational experiences in the field of PLC 14. Lack of time 15. The busy schedule of colleagues due to the implementation of various dictated programs in the school 16. Lack of skilled persons in forming these communities 17. Absence of all colleagues or maximum presence on the day of sessions 18. Little visits from parents, even with an invitation from the teacher 19. Lack of proper planning 20. not recording the opinions of colleagues in their name in the session 21. Lack of support from the principal to have PLC in the school
	Cultural	22. Teachers consider these communities fruitless 23. Lack of familiarity of teachers with PLC in schools and its benefits 24. Resistance to change 25. Lack of honesty and trust in the behaviors of colleagues 26. Teachers' avoidance of being in school for more time 27. Lack of welcome from teachers 28. Disagreement between male and female colleagues in most cases 29. Lack of creative and energetic leader among teachers 30. Lack of a culture of consultation 31. trust of experienced teachers in young novice teachers 32. Lack of student families' cooperation with the school
	Group	33. Lack of sufficient motivation 34. Excessive use of mobile and Internet by teachers and lack of sufficient opportunities to participate in the learning communities 35. Lack of teachers 'independence and intellectual freedom in school 36. Prioritize individual interests 37. Teacher Depression 38. Old colleagues who are not up to date and don't accept feedback
	Individual	39. The dominance of the individual spirit over activities rather than the collective spirit 40. Negative competition 41. Lack of colleagues 'flexibility 42. Lack of unity and solidarity in thoughts and actions among colleagues

As can be seen in Table 7, barriers to have PLCs in schools were divided into five axles: structural - administrative, executive, cultural, individual and group.

Analysis of the fifth interview question: What preparations and requirements does PLC require?

58 items were extracted, which were classified into eight Main Categories, and in the next stage, common axles were identified and named. The results of these analyzes are shown in Table 8.

Table 8: Open, axial, and selective codes in response to the preparations and requirements of PLC

Selected Code	Main Category (Axis Code)	Related Topic Categories (Open source)
Preparations and requirements of PLC	Practical principal' support	1. Providing the necessary conditions and facilities by the principal 2. Encouragement of colleagues by the principal 3. Closer and more effective communication between school staffs and teachers 4. Comprehensive principal's support of organizing such a community 5. Encourage colleagues to study in person and share it with other colleagues in formal and informal group sessions by the principal 6. Put aside some useless time-consuming programs and devote time to the PLC 7. Record comments in the name of colleagues and consider it for annual evaluation
	Schedule sessions (location, time, process, attendance)	8. Devote at least one extra hour, out of school time for this purpose 9. Specify and announce the time and place of the sessions one week in advance 10. Hold sessions at least once every two weeks 11. Attract the maximum presence of teachers from all grades 12. Determining the subject of the sessions in advance with the vote and consultation of colleagues 13. Pre-study on the topic of sessions 14. Selection of a volunteer and motivated coordinator and administrator for sessions to give feedback to colleagues periodically 15. Choose limited range of topics for a session, not various topics 16. Plan these sessions based on educational needs 17. Forming committees for each grade to manage these sessions periodically and voluntarily
	Use of expert and knowledgeable people	19. Use the point of views of experienced teachers 20. Invite knowledgeable ones who can provide related experiences in the international arena 21. Holding sessions with the presence of retired experienced teachers 22. Invite university professors in this field 23. Invite a scientific lecturer to explain the urgent need for these communities in the schools
	Strive to change for open and positive organizational culture	24. Raise the spirit of criticism and flexibility 25. Change teachers' attitudes to learning from each other 26. Creating and strengthening the spirit of continuous learning among colleagues 27. Creating and strengthening the research spirit in colleagues 28. Encourage a sense of compassion and responsibility for others' learning

		29. Creating interest for mindfulness in school
		30. Creating a sense of trust among colleagues
		31. Creating mental and intellectual security to comment in these sessions
		32. Strengthen divergent thinking
		33. Raising social morale and solidarity among teachers
		34. Belief in teamwork
		35. Creating and strengthening a culture of interaction and dialogue in school
		36. Put aside personal prejudices and intentions in expressing opinions
	Attention to infrastructure by senior officials	37. Using professors with school level backgrounds of teaching in teacher training universities
		38. Reduce student numbers in the classrooms
		39. Implementation of teacher ranking system
		40. Allocate funds for the use of experts for having PLCs in schools
		41. Encourage schools that have taken the first successful steps to build PLCs
		42. Considering privilege for teachers' annual evaluation who provide evidence for effective participation in these sessions
	Use of the student parents 'opinions	43. Promote parents' cultural literacy to cooperate with the school
		44. Participation of parents' representatives in some of these sessions
	Student Participations	45. Attending of fifth and sixth grade student-teachers in these sessions
		46. Attending of student representatives in some sessions
	Raising the level of teachers' awareness of PLC and its benefits	47. Introducing some books about PLC and its benefits in schools
		48. Providing classes (virtually) to inform teachers about PLCs
		49. Training and providing necessary information about PLCs through educational videos of initiative schools in this field.
		50. Providing notes, brochures, posters, and books about PLCs in schools

As It is shown in Table 8, the requirements for forming PLCs in schools, fell in 8 main areas under the headings of; practical support of the principals, session planning (place, time, process, presence of members), use of experts and knowledgeable people, strive to change for open and positive organizational culture, attention to infrastructure by senior officials, the use of student parents 'opinions, student participations and raising teachers' awareness to PLC and Its benefits.

Discussion and conclusion

The purposes of this study were to investigate the status and challenges of the elementary schools of Tehran province cities in PLCs' components in order to provide the necessary practices to successful establishment of PLCs in these schools. As the findings showed, the difference between current situations of these schools in PLCs components compared with desired situation, in both generally and in all its components, was significant and much less than the desired level. As mentioned earlier (Hord, 2009, Nkengbeza, 2014, Lee and Kim 2016, Nkengbeza, & Heystek , 2017, Itumeleng, 2020, Qian & Walker, 2021, Admiraal, Schenke, De Jong, Emmelot, & Sligte, 2021), for establishment of PLCs in schools, it should focused on the five practices of supportive and distributive leadership, collective creativity, common values and visions, supportive conditions and personal Shared practices. Therefore, the current situation of PLCs in the elementary schools of Tehran province cities reveals the urgent need for planning to familiarize teachers and principals to provide the necessary preparations for establishing PLCs. To get out of this situation, Tayag (2020) identified such ways by recognizing opportunities, adopting

rich learning strategies and materials in schools, supporting the recruitment of new staffs, better interaction between principals and teachers in schools, and following related purposeful discussions among colleagues. In addition, the findings of this question are in line with the research results of Hosseinpour Toulazdehi et al. (2017) and Antinluoma et al. (2018).

Breifly, PLCs are characterized by main following features;

- Scientific participation and cooperation in all school affairs,
- The existence of common values and ideals among all staffs with a focus on responding to students' learning needs,
- Collective learning among staffs and using this learning to meet students' needs,
- Investigating teachers' behaviors in classrooms by colleagues and providing the necessary feedback and assistance to support each other and provide opportunities for professional development,
- Providing the financial, material and environmental facilities by principals to support the above processes.

In sum, PLC is a group of professionals and educators in schools who are constantly learning with each other (Hord, 2009), so that it may lead to improving teaching practice and ultimately student learning (Huijboom, Van Meeuwen, Rusman, and Vermeulen ,2021). In other words, schools benefit greatly by the least cost while using the collective and potential forces that exist in PLCs. As Darling-Hammond et al. (2009) have stated that effective professional development is (amongst others) collaborate and collegial, practice oriented, combining working and learning, active learning.

Based on the qualitative research findings practical implications for teachers, principals and middle managers (administrative level) are briefly presented:

Practical implications for teachers

Research on teachers' professional development shows that most research on teacher professional development fails to consider how learning is embedded in professional lives and working conditions, acknowledging the context of teacher learning (Opfer and Pedder 2011, Cordingley 2015). In their literature review, Opfer and Pedder (2011) propose to reconceptualize research on teacher professional learning to better understanding of under what condition, why and how teachers learn. The current study provided insights into what interventions elementary schools organize to facilitate, support and enhance professional learning of their teachers. Teachers have great share in creating PLCs in schools by practices such as offering guidance to colleagues by commenting on their evaluation of students' portfolios, discussing and exchanging views on lesson plans, teaching methods, and the types of planned assignments, different types of written and oral evaluations of students, etc. in formal and informal school sessions (Lakshmanan et al., 2011; Tschannen -Moran & Hoy, 2001; Zheng, Yin, & Li, 2019). In the classroom, they should ask students to write notes in groups about what they have learned and read in class to discover the strengths and weaknesses of the students. In council sessions, present their educational action research projects to use the valuable opinions of their colleagues. It is recommended that in these cases, a person who is aware of the research action, for example an academic professor, must be invited to attend the session. Teachers should determine a volunteer and energetic coordinator to outline the goals, activities and actions needed to be discussed in future sessions. They may suggest to principals informed and knowledgeable experts on the topics of the sessions to be invited and attend. They may need to learn effective communication skills to promote their capacities to give appropriate feedbacks to each other.

Practical implications for principals

Since the principals have legal authority to allocate, support and provide different organizational sources for implementing decisions, they can play leverage role in creating and establishing PLCs in schools. First of all, principals themselves should try to gain awareness of the benefits of PLCs and should not be afraid of the teacher communities. They are expected to reduce the communication distance between oneself and the teachers so that the teachers can communicate directly with them. As studies have shown (Akiba and Liang, 2016, Hord, 2009) supportive and distributive leadership and supportive conditions provide by principals are important for collective creativity and personal shared practices. However, noticeable point is that teachers participating in bureaucratic collaboration may experience reduced engagement in deep learning or even negative emotions (Qiao et al., 2018; Yin, 2013; X. Zhang & Wong, 2018). Therefore, principals should take away direct control over teachers and staffs and respect independence and freedom of action. Principals should give credit to teachers who share their successful personal practices and experiences (Feldman, 2020). For example, principals should allow teachers for team teaching in the same grade, at least once every six months. In evaluating teachers' process, they focus on the process-based approach, not the result-oriented approach that pays attention to short-term superficial goals. Aline with the result of this study, Admiraal, Schenke, De Jong, Emmelot, and Sligte (2021) have pointed out the more embedded PLCs' interventions were in the culture of schools, the more sustainable PLCs appeared to be. Therefore, to spread the culture based on active learning in school, principals should show that they are present as an active learner in school through consultation, discussion and exchange of views, holding sessions and such activities. They can create an atmosphere based on trust and intimacy so that teachers can comment in council sessions with peace of mind. For example, after reviewing the points about an educational decision, the final vote of the teachers should be received in a secret envelope and after considering them, the result should be announced. In educational decisions, the focus should be on student learning and at the end of the implementation of each decision, with qualitative and quantitative measurements of student learning outcomes, give feedback to project implementers. By publishing brochures, reflect the results and achievements of learning communities to their school, official administrators as well as other schools in order to attract positively the attitude of teachers, principals and superior officials to the establishment of PLCs. To break the silence of old teachers who are adhering to traditional, and to use their advice and consultations, principals should give credit to them to share their experiences and take a mentee role in schools.

Students and their parents are other two important factors that should be considered by principals. They should justify students' parents to attend school sessions. Sometimes, it is necessary that representatives of the Student council attend the sessions to inform the teachers directly about the students' points of views. In the role of teacher assistants will help students to learn and reflect the necessary feedback to their teachers.

Finally, principals can use the capacity of information technology and have in schools, groups or school channels to provide the necessary information in the field of professional learning communities at the lowest cost and in the most appropriate time to their teachers and staffs.

Practical implications for middle managers (administrative level)

Since some of the suggestions are not within the principal authority and require obtaining permission from higher authorities, it is necessary for middle managers at the administrative level to assist principals and teachers in forming and establishing PLCs by providing the following conditions, otherwise PLCs, like other beautiful concepts in the field of education, will not lead to more formalities. Middle managers should make

aware principals and teachers about the importance and necessity of PLCs and make the capacity to establish them in schools by holding training workshops (Hord, 2009, Nkengbeza, 2014, Nkengbeza, and Heystek, 2017). In the way that provide opportunities for principals to acquire knowledge about effective leadership practices in the school, such as participatory, transformational, servant and distributive styles of leadership, etc. In addition, principals should be taught how to persuade teachers to create PLCs. They can authorize principles to allocate one hour per month for teachers to participate in PLCs and teachers have the freedom to choose how to spend this one hour by participating in related sessions outside the school, for example in academic centers, seminars, conferences, research centers and then provide valid evidence.

Each research seeks to answer the basic questions. But answering the questions is not considered the end of research, due to the limitations of research; new horizons are opened for future studies. Therefore, it is suggested that a PLC model for establishing in secondary schools be designed in future studies. Also, it is recommended that the direct effects of external factors, for example; the administrative and institutional levels of education system on the creation of PLCs in schools, be studied.

Ethical considerations

During the implementation of this research and the preparation of the article, all national laws and principles of professional ethics related to the subject of research, including the rights of statistical community, organizations and institutions, as well as authors and writers have been observed.

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Conflict of interest

According to the author of the present article, there was no conflict of interest. This article has not been previously published in any journal, whether domestic or foreign, and has been sent to the School Administration Quarterly for review and publication only.

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