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Lifelong Professional Development and Learning Communities in Contemporary Schools: Views of Primary School Teachers

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Abstract

According to the literature and to international politics, contemporary societies should learn how to respond immediately to crises in the environment, the economy, in health etc., as well as to the rapid socio-economic, demographic and technological developments on a global level. Education has been placed at the center of this effort and teachers are at the forefront. Within this context, educational administration promotes teachers' lifelong Professional Development (PD), the transformation of school units into Professional Learning Communities (PLCs) and the strengthening of school principals' capacity for pedagogical leadership. The Greek educational policy and school administration, having been formulated by long-standing and deep-rooted centralized and bureaucratic procedures, has recently begun a systematic effort to respond to the above international calls without much success. Therefore, this study aims to investigate the extent to which efforts for Greek schools to become learning communities that support teachers' lifelong PD have been successful and how teachers, as recipients of these changes, perceive them. The research results mainly showed that schools function to a moderate degree as PLCs while school principals have moderately developed the appropriate leadership practices which would support teachers' PD through PLCs. The findings of the study highlight the importance of the collaborative, supportive and pedagogical role of school principals, as well as the need for reforms (e.g. in the design and implementation of the school curriculum and school staffing strategy) and for establishing support for learning networks in schools.

Keywords

Professional Learning Communities, Teachers' Professional Development,

School Leadership, School Principal, Lifelong Learning

1. Introduction

More than ever before, our societies today are familiar with managing multiple crises and changes in areas such as the environment, health, the economy and security. In this context, education is at the center of common interest due to its particularly important role in preparing young people for a world that will be characterized by both extraordinary, critical events and permanent changes. The importance given to education is so strong that it reminds us of the end of the Second World War when, aside from the technocratic, utilitarian, functional and material issues of that period, the education system was perceived as a key facilitator of economic development. This wide recognition of school education as a means of preparing for impending changes refutes arguments that the modern school cannot meet the current demands of the labor market in a modern society (Caplan, 2018). In addition, it draws the attention of scholars and politicians to the role of the teacher. This role is recognized as pivotal for the quality of the pedagogical and teaching work of the school unit. It is related to the cultivation of soft skills needed by society and the market (Doering, 2023; Ferreira et al., 2023) and, more importantly, to communication, trust and cooperation within the group (McEvily et al., 2003; Novkovic, 2022; Sasaki, 2019).

The task of preparing society and teachers, through education, for a world of constant, sudden and sometimes extreme changes cannot be considered easy. On the contrary, it is characterized as difficult primarily due to the cultural and social differences from country to country and from person to person which make the coexistence of an individualistic and collective spirit extremely difficult (Triandis, 2018). Additionally, difficulties arise from the need to manage a series of many multidimensional issues such as the control of student leakage, inclusion, the adaptation of technological and environmental challenges to teaching/learning, the management of behavioral problems, leadership in the school classroom, etc. Lifelong PD, that is how teachers "learn to learn and how they apply their knowledge in practice to support pupils' learning" (Postholm 2012: p. 405), is perhaps the most significant way that schools and teachers themselves can respond to the multidimensional nature of the modern school and the demands placed upon it. This is because teachers' PD has been linked, in a series of studies, to an improvement in the quality of the teaching and learning provided in schools (Avalos, 2011; Mitchell, 2013), the responsiveness of the school unit to local specificities and the needs of students, the quality of school life, and the success of educational reforms (Villegas-Reimers, 2003). Inevitably, therefore, the interest of scholars/researchers and the educational community in this field has remained particularly strong for almost two decades (Ifanti & Fotopoulou, 2011; Sancar et al., 2021; Villegas-Reimers, 2003). From the primary school-tea-

cher's perspective (especially that of the newly qualified) PD is also considered crucial since it is the means to enhance his/her pedagogical content knowledge, science content knowledge and use of new curriculum materials as well as to respond to challenges to teachers regarding classroom life (Bantwini, 2012).

Today, the school is recognized as a key location, both physical and conceptual, for teachers' lifelong PD (Patton et al., 2015; Postholm, 2018). The reason for this is that each school constitutes a unique space dedicated to pedagogical/teaching work in which teachers make key and important individual and collective decisions. It is also the space that gives teachers the stimuli to revise attitudes/perceptions, strengthen skills and update knowledge with which they can manage the problems encountered during their school teaching career. Consequently, the model of teachers' PD based on in-house education that takes place once or twice during their career with the aim of retraining and updating the knowledge/skills of the teaching community, mainly in a formal context, based on the binary relationship between trainee and trainer, is no longer enough. On the contrary, the dominant model is the continuous PD of teachers in the workplace (i.e. on school premises) through PLCs, that is through "a cohesive group of educators that focuses on collective knowledge and occurs within an ethic of interpersonal caring that permeates the life of teachers, students and school leaders" (Stoll & Louis, 2007: p. 3).

Despite differences in how the term is defined and the need for a comprehensive understanding of its elements (see Moosa et al., 2022), most scholars seem to agree that a PLC refers to a group of teachers who share and critically question their practice to improve school life as well as the school's vision, values, and perceptions for both students and society. This kind of questioning, according to De Neve et al., 2015: p. 32, must happen "in an ongoing, reflective, collaborative and inclusive way which takes professional growth and orientation on learning into account". It is also pointed out (Christensen, 2022) that applying the institution of PLCs for the PD of teachers is not easy, mainly due to the large number of different theoretical perspectives applied to it, which make its definition and measurement a hard task. Therefore, many schools across the world have not succeeded in its full implementation (Lomos, 2017; Pang & Wang, 2016). But this may also be due to the absence of a particular factor or a combination of factors that characterize a school PLC (Hofman et al., 2015) such as (among others) the inherent characteristics of teachers (mainly their difficulty to join and function in groups and their attitudes towards them), the management system of each educational system, the absence of pedagogical leadership, and the lack of supporting structures & logistical infrastructure.

The inability of Greek education, so far, to adopt PLCs in the PD of teachers and the operation of its school units is a typical case that includes many of the above deficiencies. Specifically, Greek school education largely maintains its centralized/bureaucratic character (Saiti & Saitis, 2023; OECD, 2017), it is characterized by the absence of a culture of teamwork among teachers in teach-

ing/learning issues, school principals do not have the time to exercise their pedagogical role as leaders of the school unit (Papadatou & Alexopoulos, 2019), and the lack of logistical infrastructure remains significant (Dascalaki & Sermpetzoglou, 2011). For the above reasons, the transition that has been attempted in Greek education (e.g. through laws 2817/2000, 2986/2002, 4547/2018)—from the logic of periodical, formal, centrally planned forms of training to one of in-school training involving groups of teachers—is not considered satisfactory, neither by previous research studies (Balasi & Iordanidis, 2019; Patsatzaki & Iordanidis, 2018) nor by the Greek Teachers' Federation (DOE, 2018). However, this situation is likely to have changed nowadays due to the impact of the recent pandemic on the school climate (Huck & Zhang, 2021; Skoulidas et al., 2022) but also due to the recent entry into force of Law 4823/21, which institutionalizes teamwork in schools, attempts to stimulate horizontal collaborations in the school, and highlights the value and dynamics of in-school training.

Taking into account the above, this work aimed to gather and analyze the opinions of primary education teachers regarding their PD, the operation of school units as PLCs and the role of the school principal. More specifically, the following were set as individual objectives of this research: 1) determine the level of PD among the teachers sampled, 2) determine the extent to which the teachers in the sample consider that the school units in which they work function as a PLC, 3) examine the leadership styles and practices of the principals that contribute to teachers' PD and the school's functioning as a PLC (distributed, pedagogical and transformational), 4) investigate a possible relationship between PLCs and PDs at school and teacher levels 5) investigate a possible relationship between the degrees to which the three forms of leadership examined in this study are exercised, as well as how each of these models are exercised in relation to a) teachers' PD and b) the presence of a PLC in the school unit, 6) examine whether PLCs can be predictors of the professional development of teachers, and 7) examine whether the three forms of leadership can be predictors of teachers' PD and the presence of PLCs in the school unit.

In order to achieve the above objectives, the paper is structured as follows: First, in the theoretical approach section, the concepts of teachers' PD and school PLC are discussed and a review of the relevant research is presented. There then follows the research methodology, the discussion and the conclusions of the research results. Finally, the practical usefulness of these conclusions, the research limitations, proposals for strengthening teachers' professional development through PLCs and the pedagogical role of the director in the modern school, together with the suggestions for further investigation of the subject, are presented.

2. Literature Review

Interest in the PD of teachers, as a means for an effective teaching/learning environment in schools, has been intense and the definitions are many (e.g. Pedder

& Darleen Opfer, 2013; Postholm, 2012; Tack & Vanderlinde, 2014). Taking them into account, we would define teachers' PD as a continuous, evolutionary process of acquiring experiences and revising knowledge/skills with a research-based disposition that enhances and enriches school life. Teachers' PD can take place either formally or informally (Avalos, 2011; Richter at al., 2014). Based on the distinction between learning styles (OECD, 2010), we would include in the formal P.D. any periodical, institutionalized and organized form of training for school teachers (in terms of duration, support methods and learning objectives). This category of training is provided, for the most part, by organized official institutions (e.g. training centers, institutes, university institutions) inside or outside the school through courses, conferences, seminars, workshops etc. and results in a formal (recognized) qualification. It takes into account first the needs of the system and, secondly, the specific needs of teachers as shaped by their daily life at school. In contrast, the non-formal category of PD is not characterized by a strict organizational framework; it includes topics that are close to the teachers' interests and is open, both in terms of its goals and its audience. Also, its providers tend to be from outside the formal education system (e.g. teachers' associations, voluntary action groups, theatrical or artistic groups) and participation of teachers in them is optional. In addition to the above two forms of teachers' PD, informal PD is also recognized as a form of professional development that includes everything the teacher acquires on a daily basis (knowledge, skills, experiences, perceptions, attitudes, values) through his/her interaction with the school environment, the dominant educational ideology, the school culture and his/her independent, personal research.

Despite the strengths and benefits of each of the above categories of teachers' PD, today the emphasis seems to be more on its non-formal and informal forms featuring innovative alternative approaches, teachers' educational work but also their research, a sense of collectivity and a collegial/cooperative mood in the school. These formats include peer-to-peer discussions, school networks, distance learning, blended learning models using ICT, mentoring, research activities, peer learning, self-directed learning and in-school learning through PLCs.

PLCs maintain a dominant role in the literature related to the professional development of teachers (DuFour, 2004; Feldman, 2020; Schleicher, 2016; Stoll et al., 2006; Passias et al., 2015). This because they are fully responsive to the cooperative operating contexts of the modern school and they contribute to the management of current educational issues which improve the quality of the education offered. More specifically, they provide continuous support to the teacher, they are linked to daily teaching practices, they enable the immediate application of new knowledge in the field, they are easily aligned with the priorities and goals of the school, they strengthen the organization's commitment to the school unit and the self-confidence of teachers, and they save time and material resources. In addition, the opinion has been formulated that teachers who work in professional learning communities operate more cooperatively and autonomously, are more student-centered, and acquire motivation for further ef-

fort and self-improvement (Roy & Hord, 2006; Vescio et al., 2008).

From the synthesis of the relevant literature, the following five main characteristics of PLCs emerge (DuFour, 2004; Hord, 2009; Kools & Stoll, 2016; Lee & Kim, 2016; Stoll & Kools, 2017):

1) Supportive leadership which, in the case of PLCs, is defined for the most part (Yin & Zheng, 2018; MacLeod, 2020; Carpenter, 2015) through the models of distributed, transformational and pedagogical leadership.

2) Shared vision, which is formed according to the shared values adopted by teachers to achieve the commonly accepted purpose and realistic goals of the school unit, primarily in terms of teacher support, learning and the psychosocial development of students.

3) Collective learning and the application of learning. This characteristic refers to the sharing of knowledge, information and practices among teachers through reflective discussion and inquiry. The outcome of the process is expected to lead to a common repository of knowledge and experience that is accessible to all. With the help of this repository, school teachers, collaboratively, will be able to adapt their teaching practices to the particularities of their students.

4) Shared personal practices, which is achieved through mutual observation of teachings and by reflecting on them with respect, mutual understanding and trust. Based on the information from this reflection, school teachers will then be able to support each other through changes and develop common strategies for teaching and managing their classes.

5) Supportive conditions. In order for the above characteristics to exist and for a school to function as a learning community, a series of supportive conditions must exist. For example: a) school time made available for teacher collaborations, b) an appropriate space for group and individual discussions, c) modern material and technical infrastructure (e.g. adequate and appropriate school rooms, school workshops, means of communication/teaching), d) active and substantial participation in the joint discussions/meetings of all specialties that are directly or indirectly involved in teaching/learning and in the management of the school classroom, e) the establishment of communication structures/networks and cooperation between teachers, and f) strengthening school and teacher autonomy to facilitate initiative-taking and positive interpersonal relationships.

It is worth noting that, in order for a school to function as a learning community, these characteristics need to coexist, to be interconnected and interdependent (Morrissey, 2000). However, according to Hord (2007), the characteristic which refers to the sharing of personal practices is the most important and yet it is usually the last to be developed, even though it is the main indicator of a school's learning activity. As the characteristics of a PLC are multiple, complex and difficult to define, the transition of a school unit to a PLC is neither easy nor automatic. On the contrary, it takes time; it depends on the characteristic features of each school unit in terms of conditions, structures and culture (Passias et al., 2015; Gray et al., 2016) and is carried out gradually in three phases (Jones

& Thessin, 2015; Olivier & Hipp, 2010; Leclerc et al., 2012):

1) The initial (starter) or initiation phase. In this phase the school's teachers realize the need for change; however, the shared vision is not being reflected in the school's practices. For example, the teachers are not cooperating with each other and there is no sense of collective culture. Also, the director does not share his/her authority and makes important decisions as the sole person in charge.

2) The development (developer) phase or implementation phase. In the second phase, while schools have a clear shared vision, this is neither transparent nor clearly reflected in their school practices. Teachers can sometimes cooperate and share knowledge, ideas and information but the competition between them may still continue. The principal delegates some of his/her authority to the members of the educational staff, relying more on the relational leadership model (Uhl-Bien et al., 2012).

3) The mature phase or phase of institutionalization. Schools in this third phase are inspired by a clear and shared vision that guides their pedagogical practices. Also, supportive conditions (human relationships and physical structures) promote collaboration among teachers and foster a visible and strong collective culture, which is seen as a means of improving student learning and teachers' professional development, while the school principal delegates his/her authority to the teaching staff and encourages them to develop leadership skills and actions. At this level, the change is also embedded in the school culture and characterizes the wider operation of the school.

According to a series of related research studies, many schools both in Greece (Balasi & Iordanidis, 2019) and abroad (Lomos, 2017; Pedder & Darleen Opfer, 2013) have so far not managed to reach the third desirable stage. Additionally, these studies point out that, due to the inherent difficulties of implementing a PLC in schools but also due to the culture (Stoll & Louis, 2007), the institutional framework, organization, operation and political choices in the school education of each country (Hairon & Dimmock, 2012), collaborative practices are superficial and do not essentially characterize school life. In the Greek educational reality, one can identify many of the reasons that have been mentioned as obstacles to the implementation of PLCs in schools. For example, teamwork is not yet a dominant element of the Greek classroom (Strogilos & Tragoulia, 2013) and most teachers are quite suspicious and cautious about engaging in collaborative training practices such as co-teaching, teaching observation, counseling, reflection and conducting research activities (Liakopoulou, 2014), resulting in isolation dominating school life (Patsatzaki & Iordanidis, 2018). The causes of the above, among others, could be: 1) the centralized administration system which, with regulatory provisions, largely determines the teaching and pedagogical work of the school and the introduction of changes in it (Koutouzis, 2012; Saiti & Saitis, 2023), 2) the inability of the Ministry of Education, the schools and their supporting institutions to implement the legislative provisions of Law 4823/2021 which attempt to strengthen the teamwork and autonomy of the teacher, 3) the link between the institution of PLCs and the evaluation of schools and teachers,

which has provoked a reaction from teachers' trade unions in the country, and 4) the bureaucratic role and the insufficient preparation of school directors in the field of psychosocial and pedagogical teacher guidance, which prevent them from supporting the implementation of PLCs in schools.

3. Methodology

3.1. Research Tool

An anonymous questionnaire was chosen as the tool for this research since it was used to collect data in a series of similar studies in recent years (e.g., Fotopoulou & Ifanti, 2018; Mahmoudi & Özkan, 2015; Meesuk et al., 2021; Thornton & Cherrington, 2019). The following research tools were used to develop the questionnaire, after studying the relevant literature (Roy & Hord, 2006; OECD, 2016; Nguyen et al., 2023; Hauge, 2019): 1) the TALIS Teaching and Learning International Survey (TALIS) (Ainley & Carstens, 2018; Rutkowski et al., 2013), 2) the Professional Learning Communities Assessment-Revised (PLCA-R) by Olivier & Hipp (2010), 3) the Multifactor Leadership Questionnaire (MLQ 5X, short version) by Bass and Avolio (1997), and d) the Principal Instructional Management Rating Scale (PIMRS) by Hallinger et al. (2015). The above research tools were translated into Greek and adapted to the Greek school reality after an exchange of opinions with teachers and principals of primary schools. Then the reliability of the questionnaire was tested through a pilot study on a sample of 52 people (who were excluded from the sample of the main study), with a high reliability index of .89.

The final questionnaire included measurements of two kinds. The first type of measurement was based on variables that can be characterized as general characteristics of the sample (see Table 1).

The demographic data of the survey also showed that the mean years of service of the teachers in the sample at the school they served was 5.82 years and the standard deviation was 6.09. Regarding the time spent collaborating with the current director of the school, the average was found to be 3.59 years and the standard deviation 3.85. The second type of measurement consisted of closed-ended questions on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree, or 1 = Not at all to 5 = Very Much), divided into three sections. Section one included eight questions which focused on the formal, informal and non-formal forms of professional development: ICT utilization actions, European programs, seminars, training programs, research activities, school networks, teacher networks, literature study and the adoption of new pedagogical methods. (We are reminded that the standard forms of training concerning the attendance of postgraduate studies and long-term academic seminars were not examined by this research. This is because the impact of these forms of training on teachers is already known to be substantial as they have been linked by the Ministry of Education to their hierarchical development and their salary increases.) Section two, using twenty-two questions, addressed the field of profes-

sional learning communities and measured the five dimensions of the phenomenon: supportive leadership, shared values and vision, collective learning, shared practices, and supportive conditions (relationships and structures). Lastly, section three included twenty-seven questions through which the practices of school leadership (transformative, distributed, pedagogic) were investigated regarding professional development and professional learning communities.

Table 1. Frequencies of demographic and occupational characteristics of the sample.

Characteristics	Frequency	Percentage (%)
i. Gender		
Male	23	18.7
Female	100	81.3
ii. Age		
21 - 30	28	22.8
31 - 40	38	30.8
41 - 50	35	28.5
51+	22	17.9
iii. Educational level		
Second Bachelor's Degree	11	8.9
Master's Degree	68	55.3
PhD	5	4.1
None of the above	39	31.7
iv. Academic seminars (duration in months)		
Up to 3	19	15.4
4 - 9 months	50	40.7
9+	33	26.8
None of the above	21	17.1
v. Employment relationship		
Permanent	80	65.1
Supply teacher paid on sessional rate basis	41	33.3
Supply teacher paid on hourly rate basis	2	1.6
vi. Number of pupils attending the school unit		
Up to 100	14	11.4
100 - 250	75	61.0
250+	34	27.6
vii. Sample collection area		
Urban area	102	82.9
Semi-urban area	12	9.8
Rural area	9	7.3

3.2. Sample and Data Collection

The questionnaire of the present research was distributed by the researchers via mail (conventional, electronic) during the period April-June 2023. It was completed by primary school teachers, whose demographic characteristics are listed in Table 1. The sample of this research came from two regions of the country—Attica and Corinth—in order to collect data from metropolitan/urban, semi-urban and rural parts of the country. This was due to "the existence of a substantial urban-rural education gap in the majority of countries" (van Maarseveen, 2021: p. 684). Ultimately, we received a total of 123 questionnaires from primary schools in the above areas, sufficiently completed and suitable for further statistical processing (a 65.8% response rate).

3.3. Data Analysis

The statistical package SPSS (v.25) was used as the main tool for the statistical analysis of the findings. Considering the aims of the study (see Introduction), the main techniques of statistical analysis employed were Cronbach's α internal reliability indices, the computation of descriptive statistics (means, standard deviations), independent samples T-Tests, the analysis of variance (ANOVA), Pearson correlations (two-tailed) and regression analysis. After investigating the internal consistency of the questionnaire's questions, the results showed that the reliability coefficient for each subscale ranged from .80 to .90 (see Table 2) and the questionnaire's total reliability was .973.

Moreover, a preliminary analysis was conducted to ensure the assumptions of normality, linearity, multicollinearity and singularity remained valid. Specifically, all the association coefficients were between .30 and .80, the Tolerance index was greater than .10, and the Variance Inflation Factor (VIF) less than 10. Therefore, according to Marcoulides and Raykov (2019), there was no problem of multicollinearity.

4. Results

As per its first objective, this research attempted to determine the level of professional development of the participating teachers. The participants rated their preferences through a five-point Likert scale (1 = Not at all to 5 = Very Much). From the descriptive analysis of the research data, it initially emerged that the level of professional development of the research teachers was low overall (M = 2.73, SD = .69) and in terms of its individual dimensions, which typically include participation in European programs, school networks (M = 2.88, SD = .86) but also not-so-typical/less formal dimensions such as participation in teacher networks and personal research studies on education (M = 2.64, SD = .74). In addition, it was found that the teachers participating in the research focused on their professional development either "Very often" or "Always" concerning the use of information and communication technologies (47.1%) and the use of new pedagogical methods for teaching (65%). In contrast, it was found from the present

Table 2. Reliability statistics.

	Cronbach's Alpha	No. of Items
Section 1	.805	8
Section 2	.940	22
Section 3	.984	27

research that the teachers sampled did not participate in European programs or school networks, indicating that they are involved in such actions "Rarely" or "Never" (71.5% and 52.1% respectively).

In line with its second research objective, this paper tried to determine the extent to which the teachers in the sample considered that the school units in which they work function as PLCs. The descriptive analysis of the research data showed that, overall, a learning community existed to a low degree in the schools studied (M = 3.05, SD = .73). Also, the average values of the five individual dimensions of the professional learning communities were found to be low: 1) shared and supportive leadership (see items 7 - 9 in Table 3) (M = 2.98, SD = .93), 2) a shared vision/set of values (see items 1 - 3 & 22 in Table 3) (M = 3.49, SD = .86), 3) collective learning and implementation (see items 4, 13, 27) (M = 3.13, SD = .89), 4) common practices (see items 6, 10-12, 14) (M = 2.74, SD = .86), and 5) supportive conditions for relationships and structures (see items 15 - 17 & 18 - 21 in Table 3) (M = 3.08, SD = .78).

As for the elements that characterize each of the individual dimensions of the professional learning communities in the schools studied, according to the participating teachers, they are: 1) a shared supportive leadership in which teachers are regularly encouraged to participate ("Very often" or "Always") in discussions and decision-making on school issues (54.5%), 2) a common vision / set of values and the existence ("Very often" or "Always") of a vision in school units that focuses on improving learning outcomes (62.6%), 3) collective learning and its application: teachers cooperating "Very often" or "Always" in the search for knowledge, skills and practices that they jointly implement in their school (55.3%), 4) common practices whereby the teachers surveyed exchange ideas and suggestions "Very often" or "Always" to improve the level of students' learning (59.3%), and 5) supportive conditions regarding relationships and the logistical infrastructure in schools whereby trust and respect prevail in school units "Very often" or "Always" (72.3%) and communication networks are present among school community members (51.2%), (see Table 3).

Regarding the third research objective, the research data showed that, overall, the three leadership models (which, according to the literature, support professional development and the presence of professional learning communities) moderately coexist (M = 3.33, SD = 1.08). It was also found that transformational leadership, distributed leadership and pedagogy each exist separately in schools, to a moderate degree (M = 3.32, SD = 1.06; M = 3.45, SD = 1.08; and M = 3.30, SD = 1.02 respectively). Principals' supportive leadership practices for

Table 3. Descriptive analysis of the Professional Learning Community characteristics of the research teachers.

Statement	Never	Rarely	Sometimes	Very often	Always
1. Teachers work together, developing common values, vision, etc.	4 / 3.3%	18 / 14.6%	32 / 26.0%	48 / 39.0%	21 / 17.1%
2. Common values shape & guide the teaching/learning provided by the school	3 / 2.4%	11 / 8.9%	37 / 30.1%	51 / 41.5%	21 / 17.1%
3. The common purpose (vision) focuses on improving learning outcomes	4 / 3.3%	12 / 9.7%	30 / 24.4%	48 / 39.0%	29 / 23.6%
4. Teachers make use of collective/collaborative relationships	19 / 15.4%	26 / 21.1%	44 / 35.9%	25 / 20.3%	9 / 7.3%
5. Teachers are encouraged to take initiatives (e.g., educational actions)	30 / 24.4%	30 / 24.4%	29 / 23.5%	28 / 22.8%	6 / 4.9%
6. Mentoring and coaching techniques are applied at the school	59 / 48.0%	28 / 22.8%	26 / 21.1%	9 / 7.3%	1 / .8%
7. The principal is constantly looking for professional learning opportunities (both for him/herself and for the teachers)	23 / 18.7%	32 / 26.0%	37 / 30.1%	21 / 17.1%	10 / 8.1%
8. The manager revises his/her views as a result of group discussions	14 / 11.4%	22 / 17.9%	36 / 29.3%	39 / 31.7%	12 / 9.7%
9. Teachers actively participate in any discussion or decision-making about school issues (e.g., students' learning difficulties)	2 / 1.6%	20 / 16.3%	34 / 27.6%	47 / 38.2%	20 / 16.3%
10. Teachers follow the lessons of their colleagues	34 / 27.6%	34 / 27.6%	26 / 21.2%	24 / 19.5%	5 / 4.1%
11. Teachers provide and receive feedback from their colleagues on their teaching practices	18 / 14.6%	30 / 24.4%	37 / 30.1%	27 / 22.0%	11 / 8.9%
12. Teachers share ideas and suggestions to improve student learning	6 / 4.9%	8 / 6.5%	36 / 29.3%	49 / 39.8%	24 / 19.5%
13. Teachers collectively review student results	12 / 9.8%	17 / 13.8%	48 / 39.0%	32 / 26.0%	14 / 11.4%
14. Teachers share student work in order to contribute to overall school improvement	14 / 11.4%	34 / 27.6%	38 / 30.9%	27 / 22.0%	10 / 8.1%
15. The school community is characterized by relationships based on trust and respect	4 / 3.3%	3 / 2.4%	27 / 22.0%	58 / 47.1%	31 / 25.2%
16. The school has a risk-taking culture	8 / 6.5%	23 / 18.7%	36 / 29.3%	42 / 34.1%	14 / 11.4%
17. Teachers work together to find knowledge, skills & practices they can all apply in their work	6 / 4.9%	22 / 17.9%	27 / 21.9%	52 / 42.3%	16 / 13.0%
18. Financial resources are available for the professional development of teachers	53 / 43.1%	33 / 26.8%	23 / 18.7%	12 / 9.8%	2 / 1.6%
19. Teachers have the appropriate technology and educational material at their disposal	20 / 16.2%	39 / 31.7%	27 / 22.0%	27 / 22.0%	10 / 8.1%
20. School facilities are inviting (clean and attractive to the student)	18 / 14.6%	26 / 21.1%	37 / 30.1%	29 / 23.6%	13 / 10.6%
21. There are communication/collaboration networks for the school community, including parents and the wider society (e.g., school website)	8 / 6.5%	27 / 22.0%	25 / 20.3%	40 / 32.5%	23 / 18.7%
22. The school actively participates in setting high expectations that enhance student achievement	9 / 7.3%	27 / 21.9%	44 / 35.8%	28 / 22.8%	15 / 12.2%

The values refer to absolute (n) and relative frequencies (%).

teachers' professional development and the strengthening of professional learning communities that occurred "Very often" or "Always" in the schools surveyed, according to the participants, are: 1) in the case of transformational leadership (see items 1 to 7 in Table 4): encouraging collaboration between teachers (61%), 2) in the case of distributed leadership (see items 8, 13, 16 - 17, 21 in Table 4): the promotion of good relations between teachers and parents (62.6%), and 3) in the case of pedagogical leadership (see items 9 - 12, 14 - 15, 18 - 20, 22 - 27 in Table 4): the pedagogical director exercising his/her role with confidence, and the respect he/she inspires in the school community through his/her role (61.8%).

Table 4. Descriptive analysis of practices promoted by school leadership for the professional development of teachers.

Practices	Never	Rarely	Sometimes	Very often	Always
1. Supports teachers individually in improving their teaching practices	13 10.6%	22 17.9%	39 31.7%	31 25.2%	18 14.6%
2. Publicly praises the good practices of teachers	12 9.7%	14 11.4%	38 30.9%	35 28.5%	24 19.5%
3. He/she personally praises the teachers for their efforts/performances	14 11.4%	15 12.2%	30 24.4%	34 27.6%	30 24.4%
4. Supports teachers individually in the implementation of the school's purpose/goals	10 8.1%	25 20.3%	31 25.2%	36 29.3%	21 17.1%
5. Grants letters of recommendation to teachers	16 13.0%	20 16.3%	32 26.0%	31 25.2%	24 19.5%
6. Encourages collaboration among teachers	7 5.7%	13 10.5%	28 22.8%	44 35.8%	31 25.2%
7. Promotes a high standard of professional practice as the philosophy of the school	14 11.4%	18 14.6%	40 32.5%	29 23.6%	22 17.9%
8. Encourages teachers to have an active role in making decisions about the operation of the school	8 6.5%	18 14.6%	34 27.6%	39 31.8%	24 19.5%
9. Organizes training meetings with experts	22 17.9%	27 21.9%	29 23.6%	32 26.0%	13 10.6%
10. Discusses teaching issues with teachers	8 6.5%	15 12.2%	25 20.4%	33 26.8%	42 34.1%
11. Supports the practical application of the skills acquired during in-school training	10 8.1%	25 20.3%	35 28.5%	27 22.0%	26 21.1%
12. Encourages the participation of teachers in activities to improve the school	9 7.3%	13 10.6%	31 25.2%	40 32.5%	30 24.4%
13. Ensures the participation of all teachers in in-school trainings	9 7.3%	19 15.5%	33 26.8%	36 29.3%	26 21.1%
14. Forms/recommends the purpose/goals of the school	9 7.3%	26 21.1%	28 22.8%	34 27.7%	26 21.1%
15. Leads and monitors the in-school training of teachers related to teaching	14 11.4%	29 23.5%	32 26.0%	27 22.0%	21 17.1%
16. Cultivates an atmosphere of care/trust when addressing the school's problems	8 6.5%	24 19.5%	24 19.5%	39 31.7%	28 22.8%

Continued

17. Seeks broad participation in decision-making regarding the school's strategy	11 8.9%	20 16.3%	33 26.8%	35 28.5%	24 19.5%
18. Encourages teachers to use new ideas in their teaching	10 8.1%	16 13.0%	32 26.0%	40 32.6%	25 20.3%
19. Makes high demands on teachers' teaching with students	10 8.1%	24 19.5%	44 35.8%	30 24.4%	15 12.2%
20. Allows teachers to exchange ideas or information from in-school trainings	13 10.6%	21 17.1%	25 20.3%	35 28.4%	29 23.6%
21. Helps to develop good relations with parents	10 8.1%	12 9.8%	24 19.5%	45 36.6%	32 26.0%
22. Allows teachers to formulate plans for their professional development and promotion	10 8.1%	22 17.9%	30 24.4%	40 32.5%	21 17.1%
23. Helps teachers set short-term goals for their teaching and professional development	11 8.9%	25 20.3%	38 30.9%	29 23.6%	20 16.3%
24. Establishes a standard of professional practices	13 10.5%	21 17.1%	28 22.8%	33 26.8%	28 22.8%
25. He/she is characterized by high self-confidence in his/her pedagogical work	9 7.3%	13 10.6%	25 20.3%	42 34.1%	34 27.7%
26. Monitors student progress	9 7.3%	20 16.2%	35 28.5%	35 28.5%	24 19.5%
27. Encourages teachers' visits to other classes	26 21.1%	24 19.5%	31 25.2%	28 22.8%	14 11.4%

The values refer to absolute (n) and relative frequencies (%).

Consistent with its purpose and setting as its fourth and fifth objectives, the current research investigated whether and to what extent there is a relationship 1) between PLCs at school and teachers' PD, 2) among the degrees to which the three forms of leadership examined in this research (distributed, pedagogical and transformational) are exercised, 3) between the exercise of each of these three leadership models and the PD of teachers as well as the presence of PLCs in a school unit. Therefore, a Pearson product–moment correlation was conducted to examine the above relationships. The research results initially showed that PLCs are strongly correlated with both types of school teachers' PD (see Table 5).

The above analysis also showed that all three models of leadership are positively and significantly correlated to each other in this study. Moreover, it was found that transformative leadership offered the most robust correlation to PLCs at school [r (123) = 77, $p < .01$]. In addition, it was found that pedagogical and transformative leadership are positively but weakly related to teachers' professional development [r (123) = 22, $p < .05$ and r (123) = 19, $p < .05$ respectively] (see Table 6).

For this study to test whether the level of PLCs in schools can be used to predict teachers' levels of professional development (the sixth research objective), a single regression analysis was conducted. This analysis found that 39.2% of the

Table 5. Correlations between teachers' PD and PLCs in schools (N = 123).

	PLC's	TPD	TPD1	TPD2
PLCs		.372**	.300**	.357**
Teachers' professional development (TPD)			.842**	.937**
Formal teachers' professional development (TPD1)				
Informal /non-formal teachers' professional development (TPD2)				

Note: ** Correlation is significant to the level .01 (2-tailed).

Table 6. Correlations among leaderships models, teachers' professional development and PlCs in schools (N = 123).

	TL	DL	PL	TPD	PLCs
Transformational leadership (TL)		.920**	.913**	.192*	.774**
Distributed leadership (DL)			.934**	.159	.674**
Pedagogical leadership (PL)				.229*	.747**
Teachers' professional development (TPD)					
PLCs					

Note: ** Correlation is significant to the level .01 (2-tailed); * Correlation is significant to the level .05 (2-tailed).

variance in the level of teachers' professional development was predicted by school PLCs, though to a low degree ($F (1, 121) = 9.964$, $β = 1.54$, $p = .000$, $R^2 = .138$). Additionally, in order to meet its seventh objective, this study used multiple regression analysis to examine whether the models of distributed, transformational and pedagogical leadership (together and apart) could predict the presence and level of PLCs in schools. According to the results, these three leadership models jointly predicted 80.5% of the variance in PLCs in schools ($F (3, 119) = 72.831$, $β = 1.27$, $p = .000$, $R^2 = .647$). It was also found that transformational and pedagogical leadership practices positively predicted PLCs in schools ($β = .80$, $p = .000$ and $β = .59$, p = .000 respectively) while distributed leadership practices negatively predicted the variable in question ($β = −.62$, $p = .000$).

5. Discussion

The purpose of this work was to investigate the views of primary school teachers in Greece on their PD, the level of development of their schools as PLCs and the role of the school principal as a leader of these communities. In order to realize this purpose, the initial goal set was to investigate the perceptions of teachers regarding their level of PD. The results showed that the degree of participation of teachers in formal and non-formal/informal forms of professional development is low. That said, it should be noted that the standard forms of training concerning the attendance of postgraduate studies and long-term academic seminars were not examined by the present research (see the Methodology Sec-

tion). The above finding agrees with those of previous research studies (Koulis, 2019, Sorkos & Hajisoteriou, 2021) which highlighted the low degree of professional development of the country's teachers. It could also be interpreted on the basis that, apart from the limited number of trainings offered by education consultants in schools, teachers do not have other in-service opportunities and facilities to improve their level of professional development (e.g. in terms of the number of teaching hours, the number of students per department or short-term leaves of absence).

In addition, this research showed that the teachers in the sample prefer to participate in formal (traditional) forms of PD compared to informal and non-formal (alternative) ones, thus confirming similar findings of earlier research such as Kitzoglou & Anastasiadou (2019). A possible interpretation for this finding could be the fact that their participation in these forms of training is a criterion either for a salary increase or for their hierarchical development in the field of education. Another noteworthy finding is the low rate of utilization by the teachers in the sample of PD forms related to European Programs (e.g., Erasmus+, eTwinning), probably because their participation in such activities is accompanied by a series of complex and time-consuming bureaucratic procedures. Regarding teachers' interest in the subject of their professional development, the research showed that it tends to focus on the utilization of technology and collaborative methods/practices in the pedagogical and teaching work of the modern teacher. This research result could be attributed to the increased interest of the country's educational policy in the further and in-depth utilization of ICT in teaching and learning, a stronger emphasis on electronic teaching in schools (due to the recent pandemic), the promotion of policies of inclusion, and increased incidents of intra-school violence.

The aim of this work was also to determine the level of functioning of the schools as PLCs. Taking into account the five dimensions of school learning communities, the results regarding this objective showed that PLCs are not well established. This is because the need for cooperation and the effort to form groups by teachers for the purpose of their professional development does not prevail in the country's schools. Based on these results, the research schools would be classified in the second (developing) stage of forming school PLCs (Hord 1997; Olivier & Hipp, 2010). This is a finding that agrees with those of earlier relevant studies such as Balasi and Iordanidis (2019), who have also characterized Greek schools as learning communities under development, though including them in the first stage of forming school PLCs. This result could be interpreted as having the following three dimensions. The first concerns the long-standing lack of interest on the part of the State for the institution of PLCs in schools. The second dimension concerns the intense centralized nature of administration and supervision of Greek school education, which does not give the school units room for initiative regarding actions related to their professional development. Indeed, for many years, the State has focused on providing

in-service training of a uniform nature to the country's teachers through central structures such as Regional Training Centers. Although this situation has recently begun to be revised—e.g. Law 4832/21, giving initiatives to the school director and the teachers' association to choose and organize the in-school training activities that meet their needs and to form partnerships with external agencies in this area—it seems that we are still at the beginning of an effort whose results have not yet resonated with the members of the educational community in the country's schools. The third dimension concerns the limited financial resources and support structures for the professional development of teachers (Patsatzaki & Iordanidis, 2018) and, in general, the low funding of public school units. Finally, the fourth dimension to interpreting the limited appearance of PLCs in schools could be the individualistic way of thinking and functioning of teachers in schools, as teachers, both in terms of their studies and the institutional framework of the school's operation, whereby they are not encouraged to collaborate in groups. After all, a remarkable result of this research is the finding that, among the five dimensions of PLCs in schools, the mindset and practice of the teachers' collective is absent to a large extent. This is probably due to the fact that, firstly, teachers are not provided with opportunities to observe the teachings of their colleagues or to receive feedback on the teaching practices they apply. Secondly, school principals, due to the volume of their administrative obligations, do not have time to actively promote a collaborative culture of teamwork, or for the professional empowerment and support of their teachers (OECD, 2016).

To highlight the lack of appropriate, supportive leadership that PLCs need, this work set as its third objective to examine the leadership styles/practices of the school principals that mostly contribute to teachers' professional development and the school's functioning as a professional learning community. In this regard, the research results showed that the models of transformational, pedagogical and distributed leadership (which, according to the literature, support PD and the presence of PLCs) exist in school units to a moderate degree. This finding is consistent with those of previous studies that assessed the power of pedagogical leadership (Alexopoulos et al., 2023) as well as distributed (Bestias & Balias, 2019) and transformational leadership (Eliophotou Menon, 2021; Mystakidou & Brinia, 2022) in ordinary public schools of the country. A possible interpretation for this could again be that, institutionally and practically, the principal's work in the country's schools is dominated by bureaucratic tasks. These deprive him/her of time to implement any of the three leadership models above, through which he/she could strengthen the culture of collegiality, the climate of cooperation in schools and, by extension, PD through the institution of PLCs. An additional explanation for the low presence of these leadership models in schools could be the principals' selection procedures. These procedures do not reward their studies in the administration and management of the school's pedagogical work, with the result that many of those who hold the position of

school director cannot in practice exercise their role as pedagogical guides of the school community.

Regarding its fourth objective, the research showed that there is a positive relationship between the presence of PLCs and the professional development of teachers. This finding proves the dynamics of PLCs in centralized systems with decentralizing tendencies (such as the one in Greece) and the effect they can have, both on the professional empowerment of teachers and on the strengthening of their professional identity.

Regarding its fifth objective, this work showed that three models of distributed, pedagogical and transformational leadership are positively correlated, both with each other and with the level of PD of teachers and PLCs in schools (the strongest correlation was found to exist between the transformational leadership model and the institution of PLCs in schools). This finding initially confirms the power of these leadership models in the field of study and in the implementation of teacher PD through PLCs (Kennedy et al., 2011; Leclerc et al., 2012; Wenner & Campbell, 2016). It could be considered logical since the formation of a culture of professional development through the groups that promote the aforementioned leadership models has greater impact on the operation of PLCs in schools and the promotion of professional development as a lifelong principle of teachers' professional identity.

According to its objectives, the work also showed, in the context of its sixth objective, that school PLCs are a strong predictor of the level of PD among teachers. Finally, the investigation of the seventh objective of this research showed that all three leadership models can be used to positively predict PLCs in schools to a large extent and with statistical significance. As for the negative prediction of distributed leadership in the matter of PLCs and professional development, it could also be attributed to the teachers' lack of familiarity with this leadership model, but also to the centralized culture dominating a large number of principals and schools in the country, as well as the administration of education in Greece as a whole.

6. Conclusion

The purpose of this study was to examine the degree of PD of primary school teachers, the presence of PLCs in these schools and the role of principals in the above processes, which are considered important for the quality of the education provided and the upgrading of the teacher's role in the modern school. The results showed that both teachers' PD and PLCs in the country's schools are at a relatively moderate level. However, the relationships between them are positive and strong. The relationship between leadership (pedagogical, transformational and distributed) and the institution of PLCs in schools was also found to be positive and strong. The above supports the position that the upgrading of the education provided must have the teacher as its focus and that his/her role requires continuous support and pedagogical guidance primarily in the school environ-

ment, in the spirit of cooperation and mutual support of the members of his/her educational community.

7. Research Limitations and Implications for Research, Practice and Policy

This work is subject to limitations that do not allow us to generalize the results. Therefore, it would be useful to carry out the research on a larger sample in more prefectures or regions of Greece and to explore the opinions of managers, counselors, teachers of secondary or private education and/or lifelong representatives. It is also considered useful to investigate statistically significant differences in the results of research on the PD of teachers through PLCs, taking into account the heterogeneous character of teachers in today's schools in terms of age, level of study and subject knowledge as well as the need of modern education for inter-professional partnerships. Finally, we would propose that the effects of each of the five dimensions of PLCs on the level of both formal and informal teachers' PD be investigated separately, as well as the effect of the predictive ability of school leadership directly on teachers' PD.

In the field of practical application we would propose the following in order to strengthen teachers' PD through PLCs in the modern school: 1) the strengthening of mentoring and coaching to new managers and teachers through networks of formal and informal training/professional support, 2) the stability of staff in schools, as it is a fundamental condition for the formation of a culture of professional development and a climate of teamwork in the school, 3) the promotion and support, through education consultants, of a culture of horizontal cooperation between the members of the educational community of each school in issues such as teaching/learning, educational activities and psycho-pedagogical support for the students, 4) the organization of official and unofficial collaborations of the school with external bodies such as universities, other schools, local social groups, parents' associations, state authorities as well as cultural and social bodies to carry out in-school trainings, 5) the use of electronic forms of collaboration for teachers' PD (e.g. via access to Massive Open Online Courses), 6) unburdening school principals from their bureaucratic role 7) promoting curriculum change for co-operative education, via teachers as curriculum developers.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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