Work Package 6: Application of PLCs

D6.2 Two (2) PLC case studies

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Good Practices in PLCs in Higher Education: A Case Study

Introduction

Professional Learning Communities (PLCs) have emerged as an innovative mechanism in educators' professional development, contrasting traditional approaches where external expertise is sought and predominantly drives the development process. In the PLC framework, instructors adopt dual roles as both facilitators and learners, therefore transforming educational institutions into dynamic environments for collaborative learning (Clarke & Hollingsworth, 2002). PLCs are conceptualized as cohesive units comprising of instructors with shared and aligned pedagogical interests and objectives, engaging in continuous and reflective conversations, knowledge exchange, and joint efforts aiming for pedagogical enhancement (Brookhart, 2009; Margalef & Roblin, 2016). Within this context, professional development is characterized as a continuous, comprehensive, and collaborative process, targeted at promoting educators' efficacy and consequently student academic outcomes (Slabine, 2011) as well as enhancing students' educational experiences. PLCs facilitate a structured yet adaptive framework for professional development, fostering a climate supportive of mentorship, reflective practices, as well as a sense of community among instructors (Ralston et al., 2017). This model allows instructors to refine their disciplinary knowledge, pedagogical strategies, and adaptability to educational reforms therefore equipping them to implement educational adaptations that will optimise student learning efficiency (Fishman et al., 2003; Loucks-Horsley et al., 2003)

Theoretical Framework

The essence of PLCs revolves around a data-driven, systematic analysis and constructive critique of participants' own practices through reflective dialogue, surveys of instructors' teaching practice via observations, data analysis, joint planning, and curriculum development (Stoll et al., 2005). In the literature, five distinct characteristics associated with effective teacher/instructor PLCs have been identified (Bolam et al., 2005; Stoll et Earl, 2003): (i) Cultivation of shared values and a common vision; (ii) Fostering collective responsibility for student learning; (iii) Encouraging reflection and professional self-assessment; (iv) Facilitating both individual and group professional development; (v) Nurturing a climate of supportive and collaborative leadership.

Although a recently growing number of studies have investigated the use and function of PLCs at primary and secondary education levels, there is to date relatively little investigation of PLCs in higher education (e.g., Cherrington et al, 2018; Clark et al, 2023), even though there is an increasing number of higher education institutions that run PLC programs (e.g., McLaughlin & Talbert, 2010). Although under-researched in higher education settings, faculty PLCs (fPLCs) have much to offer to academic developers as a model of professional learning. Cherrington et al (2018) investigated how PLCs supported members to strengthen their teaching and learning practices. Clark et al (2023) suggested that the PLC model can be an effective way for higher education institutions to empower their faculty to develop innovative teaching practices. Cox (2004) indicated that fPLCs can play an important role in faculty development in relation to their role as instructors, with evidence suggesting that both students and faculty learning is improved through this process. In a study exploring the potential introduction of fPLCs as an innovative way to enhance instructors' teaching competencies, Authors (2023) have identified data pointing towards new directions in faculty professional development, away from traditional approaches of lectures or seminars, focusing more on peer

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interaction and support, and student data, as well as on learning outcomes aligned with the increasing research interest in the field (e.g., Terry, Zafonte, & Elliott, 2018). Studies have suggested that PLC's can play an important role in increasing faculty's self-efficacy, helping them respond to diverse needs, and facilitating instructional change (e.g., Fred et al., 2020; Quardokus & Henderson, 2015; Trust et al., 2017). At the same time, they point to a direction for further, more detailed investigations toward shedding in-depth light on the issues related to fPLC work and impact. Similarly, some evidence suggests that PLCs can be productive in higher education (Schuck et al, 2013); however, the impact of higher education PLCs, and their characteristics, opportunities, and challenges remain largely unknown (Cherrington et al, 2018; Clark et al, 2023). Overall, even though the need to identify productive ways within fPLCs with which faculty can sustain long-term pedagogical changes in their teaching approaches is of high interest (Cox, 2004; Richlin & Cox, 2004), there is to date very little evidence whether these changes are sustained or can be sustainable beyond the participation in fPLCs (Tinnell et al, 2019).

fPLCs as well as professional growth within fPLCs play an increasingly important role in higher education classrooms, by empowering faculty to connect with their students and colleagues (Cox, 2001), and place an emphasis on evidence-based changes in teaching (Ralston et al, 2017). Overall, although there is a growing interest in higher education student learning outcomes and innovative approaches to teaching (Terry, Zafonte, & Elliott, 2018), the growth in related practices has been slow, and there are many obstacles to implementation (Palmer, 2002). fPLCs could constitute one approach to engaging the faculty community in the cause of student and faculty learning (Cox, 2004).

fPLCs may address the teaching, learning, and developmental needs of a particular faculty group or may address special campus-wide teaching and learning needs, issues, or opportunities (Cox, 2004). Stacey & Mackey (2009) suggest that potential benefits of fPLCs include instructors' better understanding of personal teaching philosophy, increased confidence in the capability of applying teaching approaches, and increased collaboration among colleagues even outside of one's own discipline. Roth (2014) identified additional benefits of participation in fPLCs: an increase in instructor motivation, development of inter-instructor relationships, reduced instructor burnout, improved teaching practices, a decrease in lecturing time, and an increase in the engagement of students in active learning opportunities. Additionally, the PLC can be a means for isolated faculty to engage with their colleagues in a way that would lead to the development of their teaching skills (Brooks, 2010; McAllister, Oprescu, & Jones, 2014), and provide meaningful opportunities for open explorations of faculty needs and reflection on new teaching approaches and strategies (McConnell, Parker, Eberhardt, Koehler, & Lundeberg, 2012; Urquhart, et. al, 2013).

In all the above, the role of a PLC coordinator is essential, involving organizing and leading collaboration in the group, fostering a supportive environment promoting growth and trust, and aiding in supporting reflective practices about teaching practices (Avgitidou, 2009; McLaughlin & Talbert, 2006; Margalef & Roblin, 2016; Nehring & Fitzsimons, 2011). Upon reviewing the literature, several roles of PLC coordinators have been identified. One role involves managing the group's activities and handling daily logistics (Jenlink & Kinnucan-Welsch, 2001; Petrone & Ortquist-Ahrens, 2004). The facilitation of building a community within the PLC through the development of a shared language among members, establishing communication norms, and nurturing mutual trust and respect, comprises of another layer in that role. (McLaughlin & Talbert, 2006; Petrone & Ortquist-Ahrens, 2004). A third role is to

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actively support the learning and development of PLC members by supporting them, identifying their learning needs, addressing their encountered challenges, and encouraging inquiry and reflection within the group (Avgitidou, 2009; McLaughlin & Talbert, 2006).

Background & Context

This case study seeks to explore the coordination of four distinct faculty Professional Learning Communities (fPLCs) at European University Cyprus over the academic year 2022-2023. The case study focuses on the fPLC coordinators, specifically examining their perceived roles, actions, and needs within the learning communities. The coordinators' perceived roles, the strategies, and the challenges they encountered will be discussed. This study incorporates a range of findings, including a comprehensive report on the application and evaluation of 15 toolkit activities, offering a range of tasks and instruments designed for various phases of fPLC group work, by university coordinators. Additionally, findings from an evaluation of a Modular Training Program tailored for fPLC coordinators aiming to enhance their competencies and effectiveness in these roles, are presented. Lastly, findings from pre- and post-measurements of participants' attitudes, knowledge, and expectations regarding the application of PLCs at the university are presented. Each fPLC representing the departments of Humanities, Social and Educational Sciences, Sciences, Medicine, and Law, was led by an internal coordinator, offering perspectives on interdisciplinary collaboration and professional learning in an academic setting.

Methodology

This case study was part of a broader initiative funded by EXCELLENCE/0421/0333, aiming to identify characteristics of effective and sustainable fPLCs in higher education. It adopts an interpretive case study approach, as outlined by Yin (2017), to explore the dynamics of four fPLCs within the university. The case study focuses on research findings deriving from four instructors who coordinated their respective fPLC, across different academic departments. The coordinators' backgrounds varied, with two having received formal pedagogical training and prior PLC coordination experience, and two without such experience. All were undergraduate program coordinators, leading fPLCs comprising of instructors from their respective programs, except from one interdisciplinary group.

The project was initiated with a new professional development program initiated by the Office of the Vice-Rector of Academic Affairs at the university, designed to promote peer support and collaboration amongst faculty members. Potential fPLC leaders were identified, and their interests concerning the project's objectives were explored.

Subsequently, four fPLCs were established around specific topics or issues of interest. The coordinators with over ten years of academic experience, received ongoing support from the internal facilitator and lead of the project. This support included regular meetings focusing on various aspects of fPLC progress, addressing challenges, and introducing new activities from a toolkit developed to support their work.

The fPLCs comprised of five to eight members each and worked on distinct topics ranging from enhancing reflective abilities in instructors to improving interactive learning and developing student-to-faculty feedback systems.

Data were collected through end-of-year interviews with coordinators and fPLC participants as well as questionnaires throughout different phases of the research project.

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Interviews (duration of about 35 minutes) included all the coordinators (4) and 10 of the participants of the four fPLCs (3-4 interviewees per fPLC, see Table 1). The interviews were conducted at the end of the academic year 2022-2023. The interview protocol was developed by the scientific team of the project based on the PLC literature as well as the long-term experience in supporting PLCs over a number of years. All interviews were conducted by the research assistant of the project, were videotaped with the written consent of the volunteered interviewees and transcribed for analysis. Using discourse-based approaches and open coding techniques (Strauss & Corbin, 1998) we analyzed all primary data, looking for characteristics in faculty work within the PLCs. All data were analyzed by two researchers independently and discussed to resolve any differences. Each fPLC was treated as a separate case, and using the constant comparison approach (Glaser, 1965) we identified common patterns. Additionally, different ways of manifestation of these patterns, and differences in the themes also emerged. The researchers discussed all themes they identified, and all differences were resolved through discussion.

Additional data sources acquired included documentation from reflective meetings and diaries kept by coordinators. A blended learning model was adopted for the fPLCs, combining in-person and online interactions, and utilizing a digital platform for asynchronous communication and access to resources. This approach also addressed the shift towards digital education transformation post-Covid-19. To evaluate the fPLCs' activities, coordinators completed reflective online questionnaires after each meeting and activity, focusing on aspects like effectiveness and group impact. A questionnaire for the Modular Training Program and the Toolkit activities provided was also designed, aimed at exploring coordinators' insights on the training's efficacy, preferences for future meetings, practical impact on their roles, and perceptions of supportive material, respectively. The overall impact of the fPLCs was assessed utilizing a mixed methods approach using pre- and post-questionnaires that evaluated changes in attitudes, knowledge, and expectations. This approach provided a detailed understanding of the functioning and impact of fPLCs within the university, enabling the research team to formulate conclusions on sustainable professional learning communities in the higher education sector.

This case study presents four distinct fPLCs within the university (Table 1), each distinguished by a specific focus. The ECE-fPLC, a five-member group from the Early Childhood Education Program, worked on enhancing the reflective abilities of student instructors, developing a continuously refined documentation tool. Meanwhile, the eight-member PhP-fPLC from the Pharmacy Program focused on integrating technology tools for large-scale audiences, addressing common teaching challenges, and frequently seeking advice from external experts for solutions. The SHS-fPLC, consisting of seven members from various health science disciplines, aimed to improve interactive learning by managing classroom dynamics, fostering inclusivity, and introducing new teaching techniques and technologies, leading to improvements in teaching practices and stronger interdepartmental relationships. Lastly, the 'Reflectionists' fPLC, a seven-member interdisciplinary team from the Dentistry, Music, and Law departments, focused on developing student-to-faculty feedback systems, with their multidisciplinary approach enhancing inter-professional collaboration and skill development.

Each fPLC was examined as an individual case, and through the application of the constant comparison method (Glaser, 1965), recurring themes and patterns were identified.

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Table 1. *The four faculty Professional Learning Communities*

fPLC	fPLC coordinator also coordinated the program of	Members of fPLC taught in the program of	Number of fPLC members	Participants volunteered for the interview
1	Early Childhood Education	Early Childhood Education	5	3
2	Pharmacy	Pharmacy	8	4
3	Speech therapy	Speech therapy	7	3
4	Dentistry	5 in Dentistry, 1 in Music, 1 in Law	7	4

Findings

Findings from the different phases of the research reveal essential patterns related to how fPLCs were perceived, how toolkit activities provided for facilitation purposes were applied, how the modular training was evaluated as well as how participants' attitudes ranged before and after being involved in the fPLCs.

Operations of fPLCs

In the four fPLCs participating in this case study, diversity in methodologies used and challenges encountered emerged, each reflecting the dynamics of the groups that were unique. The Early Childhood Education fPLC adopted a scientific, iterative approach, focusing on reflecting on and improving teaching practices, leading to the development of a specific educational tool. This process was done through structured reflection and data-driven discussions. In contrast, the Pharmacy fPLC took a more technical route possibly due to the participants' lack of formal pedagogical knowledge, relying heavily on external experts, especially for matters concerning the management of large audience challenges, something that sometimes led to a gap between theoretical advice and practical applicability. The Speech Therapy fPLC freely exchanged ideas and practices, providing autonomy as well as a variety of perspectives. However, this approach resulted in a lack of clear, joined objective leaving some participants uncertain about the future application of the ideas discussed. The Dentistry fPLC including members from dentistry, music, and law, diverged from their initial focus, as challenges of hybrid meeting formats and participation arose. Despite the challenges, they explored new digital tools and practices, suggesting a productive professional development journey. Overall, regarding the operational aspects of fPLCs, variations in focus, meeting structure, reflection strategies and depth of exploration into teaching practices shaped the group. While it is evident that some fPLCs had a clear, structured approach, others were more fluid resulting in a potential impact on the level of engagement that could consequently affect the long-term transformation of teaching practices.

Homogeneity and Heterogeneity

Based on the interviews conducted, the composition of fPLCs was linked to their operational aspects as uniformity in the composition of members, as seen in Education and Pharmacy, greatly facilitated the development of a collaborative and trusting culture that allowed an easy exchange of communications and discussions due to all members sharing similar disciplinary backgrounds and departmental teaching challenges. In contrast, Dentistry noted for its heterogeneity, demonstrated that diversity can lead to the identification of common experiences and interests that might initially seem unrelated but can contribute eventually to bonding between members as well as leading to the generation of ideas. Acknowledgment of shared challenges both in Speech therapy and Dentistry fostered a sense of belonging and mitigated feelings of isolation. Moreover, diversity allowed for multidisciplinary related solutions. Pharmacy, for instance, recognized the need for a co-coordinator with pedagogical expertise

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that would benefit the group. The variation in teaching experience also played an important role with less experienced members being supported by more experienced members through sharing insights on their academic journey.

Coordination of fPLCs

The coordination of fPLCs was influenced by the coordinators' pre-existing professional relationships with members, their strategies for fostering a sense of community, and their leadership styles. In Education and Pharmacy groups, coordinators, as aforementioned, already had established relationships with members, something that was strengthened by their collaboration in the group and also allowed a smooth transition to the concept of the fPLC work that had to be done throughout the year. Speech therapy and Dentistry groups initially faced challenges in cultivating a community feeling, employing strategies including humor to enhance group bonding. The coordinators' ability to balance leading with active participation was also important. In the Dentistry group, for example, the coordinator's enthusiasm and inclusive approach boosted member engagement and contribution. Similarly, in Speech therapy, the coordinator was commended for being an effective listener and a collaborative member, demonstrating the importance of coordinators in nurturing a productive and inclusive environment in the groups.

Time-constraints for fPLCs

Time was a significant challenge across all fPLCs. Coordinators and participants identified scheduling conflicts and time management as primary issues. Arranging a common time for meetings was challenging, with larger groups like that of Speech Therapy facing more frequent absences. Education, with fewer participants, managed to organize meetings where all members were present though sometimes had to arrive late or leave early. In Dentistry, online meetings were used to increase attendance, albeit being considered as a compromise to the meeting's effectiveness. Additionally, meetings often overran their scheduled duration, indicating engagement but also time constraints. However, participants' willingness to stay longer suggests, indeed, high engagement. Beyond scheduling meetings, time constraints also affected the planning and implementation of new ideas and practices. The Education group felt that time was an obstacle in carrying out actions as more time was needed for meaningful implementation and analysis. Both Education and Pharmacy noted challenges in finding time for reflection and preparation between meetings. This impacted the depth and sustainability of discussions, often leading to abandoning new initiatives or implementing them without adequate development.

fPLCs support and facilitation

The role of the facilitator support in the functioning of fPLCs was important and allowed for examination of how it influences their development and effectiveness. The outcomes of the toolkit activities, the impact of modular training, and changes observed in faculty attitudes and knowledge before and after the implementation of the fPLCs allowed for a deeper understanding of the impact of support regarding the groups' operations.

Support with toolkit activities

Across the fPLCs, toolkit activities were implemented (Table 2) with positive outcomes and perceptions[1] with coordinators predominantly selecting activities from the initial phase of PLC development, reflecting the importance of collegial culture, fostering shared ideas, and

[1] D4.2. Report on the application and evaluation of toolkit activities

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addressing collective needs of the group. These activities were consistently rated as highly useful indicating their effectiveness in meeting the group's needs and enhancing group operations ("Needs assessment using Stickers"; Collecting Ideas for Actions and Practices"). Moreover, "Using data for Decision Making" was another activity with high ratings that facilitated evidence-based decision-making within the groups, aligning with the literature emphasizing the importance of data-driven practices within PLCs. Additionally, activities such as "Reflection on training" and "Final Reflection and Evaluation on the action plan for professional learning" were regarded as an important two-way feedback loop that also ensured continuous improvement on how fPLCs were operated; something crucial for the sustainability and long-term impact of fPLCs.

Table 2. *Activities implementation*

Phase	Activities	Number of coordinators who implemented the activity:
Need investigation & interpretation	A5_Needs assessment using stickers	4
	A6_In-depth needs analysis form	4
	A9_Compass	3
	A12_Collecting ideas for actions and practices	1
Connecting with other needs	B9_Using data for decision-making	1
Trainings	C6_Reflection on training	3
Final report	E5_Final Reflection and Evaluation on the Action Plan for Professional Learning	1
	Total Implementations	**17**

Support through modular training

The modular training program (Table 3) was well-received[2] generally with coordinators reporting that they found it well-structured, something that facilitated a clear understanding of their roles and responsibilities within the group, engaging and applicable to their roles. Additionally, the content was perceived to be tailored to their needs, allowing them to set objectives, and evaluate their progress. Despite variations in responses suggesting different individual perspectives, the content was mostly regarded as relevant and positively impacted the coordinators' work. Suggestions for future sessions included topics related to digital tool utilization and, mentorship and insights into managing group dynamics and challenges. Additionally, the training saw a progression in coordinators' perceptions over time, with modifications being introduced, with an increase in satisfaction regarding organization, structure and content relevance. Interviews with faculty specifically report challenges in scheduling meetings and finding time for reflection and preparation, resonating with questionnaire responses.

Table 3. *Training Meetings And Modules Used*

[2] D5.2 Evaluation Report Modular Training

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Training Meeting	Month of Meeting	Modules used
1	10/2022	Module 4: Developing a culture in the group, getting to know each other and connect
2	11/2022	Module 3: Investigating group's needs and priorities
3	12/2022	Module 5: Trainings and Reflections on practices Module 8: Communication and interaction
4	01/2023	Module 6: Actions and applications and on-going reflections
5	03/2023	Module 7: Interim and final Reflection
6	05/2023	Module 7: Interim and final Reflection

Impact of fPLCs on faculty

Results from the pre- and post- questionnaires[3] administered to faculty involved (Table 4) in PLCs indicated that while certain areas saw no significant statistical change, suggesting a degree of stability in attitudes and knowledge, some positive developments were noted. Initially, participants reported that they had a stronger sense of collaboration and readiness to plan and implement actions with colleagues, indicating a collective effort and vision. This, however, was not statistically significant, except for an increased readiness to plan collaboratively. Faculty also felt more equipped to engage in decision-making and to apply new practices, something indicating their eagerness for growth. Despite this there was a slight decrease in the reflection on implemented actions, suggesting challenges pertaining to time constraints affecting deeper engagement. In regard to gender, males exhibited higher levels of engagement, suggesting gender dynamics that need further exploration.

Between the academic schools, variations were observed with the Law school showing the highest expectations and perceived achievements, despite representing only one respondent, contrasting with reports from the school of Medicine. However, post-evaluation data, faculty from the school of medicine reported that their experiences exceeded initial expectations more significantly than other schools. The school of sciences reported the least perceived achievement. These outcomes suggested a diversity in how various academic disciplines regarded the effectiveness of fPLCs leading to an in-depth comparative analysis to explore those differences. Initially, expectations between the faculties of Education & Law and Sciences & Law were significantly different, but this gap closed in subsequent evaluations, indicating similar perceptions of fPLCs. However, consistent differences persisted between the faculties of Sciences & Medicine and Education & Medicine from start to finish, signifying differences in expectations and experiences with the fPLCs. In contrast, the Education & Sciences faculties reported consistent experiences. A noteworthy shift was identified between the Law & Medicine faculties, where an, initially, insignificant difference progressed and became significant, illustrating an impact that can be attributed to fPLC engagement over time. These patterns reflect the complex and varied influences that fPLCs had across different academic schools. These differences emphasize the need for tailoring PLC strategies to each group's specific needs to optimize effectiveness.

Table 4. *Participants' demographics*

Variables	Categories	N	%

[3] D6.3 Report on pre and post measurements of participants' attitudes, knowledge and expectations evaluations of applying PLCs

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School	Humanities Social & Education Sciences	4	23.5%
	Sciences	7	41.2%
	Law	1	5.9%
	Medicine	5	29.4%
Gender	Male	7	41.2%
	Female	10	58.8%
Age	Below 30	1	5.9%
	30-39	6	35.3%
	40-49	8	47%
	50-59	1	5.9%
	60 and above	1	5.9%
Rank	Full-time	13	76.4%
	Part-time[1]	4	23.6%
I usually teach...	Undergraduate	12	70.6%
	PhD	1	5.9%
	Undergraduate & MA	3	17.6%
	Undergraduate & MA & PhD	1	5.9%

[1]Special Teaching Personnel, Special Scientist

Discussion

Across the different sources of data collected for the purposes of this project, there was a shift in faculty attitudes towards increased collaboration and professional development within fPLCs. This indicates the important role of fPLCs in promoting collaboration, trust, communication, and a collective approach to approaching challenges, problem-solving, and growing professionally. Despite overall positive perceptions, data indicate some variability in responses regarding effectiveness, something that indicates the importance of adapting fPLC strategies and activities to the specific context of a school as well as the dynamics of each group in order to optimize impact. Additionally, the common challenge identified concerning limited time suggests a need for better implementation of fPLCs in the faculty's schedule for better time management, and allocation, as well as resources to support deeper engagement and reflection. As reported in the interviews some coordinators integrated reflection as a formal part of meetings, while others treated it informally, reflecting variability in practices. This suggests that, perhaps, due to time constraints, fPLCs should set some standardized rules for their operation.

Findings align with themes evident in the literature suggesting the universal applicability of fPLC benefits in higher education settings, as the potential to increase collaboration among colleagues across disciplines and to develop inter-instructor relationships within such groups is emphasized (Roth, 2014; Stacey & Mackey, 2009). Findings also emphasized the challenges in establishing a sustainable fPLC culture, particularly in terms of time and support needed. Both in the literature as well as in the findings of this case study, the development of shared values and a common vision is recognized to be a gradual process, potentially often extending beyond a single academic year. The study also builds upon the idea of fPLCs moving through developmental phases (Clark et al., 2023; Grossman et al., 2001), but it also provides detailed insights into the nature of those phases, particularly in terms of balance between structured and flexible formats of meetings as well as a blend of diverse group members from different field. This indicates that effective fPLCs progress by maintaining clear goals while also being flexible to member needs and combining strengths of similar and varied experiences among

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participants. The heterogeneity of some groups included a diversity of perspectives and expertise which enriched the content of the work within the fPLCs. This suggests that the progression of the fPLCs, as observed in this case study, was not only about moving from one stage to another but also about how effectively the group could navigate and balance the operation of such a community throughout its progression and evolution. Additionally, the interviews conducted provided an interesting perspective on the impact of coordinators' pedagogical backgrounds on the operation of fPLCs as differences emerged between coordinators with formal pedagogical training, who approached fPLC as a research-based process, with those without such training, who operated more technical. Moreover, coordinators with pedagogical expertise were more adaptable and able to utilize a variety of tools provided, something that, through collaboration, could assist other members of the group to adopt similar practices. Also, while the literature suggests a generalized approach to challenges in fPLCs, the case study findings indicate that different fPLCs may encounter unique challenges and educational needs (Coll & Taylor, 2008), emphasizing the importance of a tailored approach in empowering fPLC work.

Conclusion

Addressing the need for more comprehensive research on PLCs in higher education, this case study presents an in-depth analysis of how four fPLCs operated over an academic year. The study presents both the productive elements as well as the challenges encountered within these fPLCs and how support as well as the impact of the groups themselves, were perceived. Findings suggest a systematic and comprehensive need to support fPLCs through a multifaceted approach, encompassing support from the university for time and resources, the facilitator, structure, and provision of resources for engagement and reflection (Roth, 2014; Tinnel et al., 2009), something necessary in the educational context.

Limitations

One of the primary limitations of this project was the limited number of fPLC modular training meetings conducted with coordinators and the limited number of participants in the fPLC applications at the University. This may have not provided sufficient opportunities to explore and practice concepts discussed in depth. Furthermore, the relatively small cohort of coordinators participating in the meetings limits the generalizability of findings as the element of diversity in experiences and perspectives from a larger group with greater variability was lacking. This can potentially affect the robustness and applicability of conclusions drawn from this study. However, the value of case studies lies not in their generalizability but in their transferability and comparability, offering insights that, while specific, can still inform wider contexts (Chreim, Williams & Hinings, 2007).

References

Avgitidou, S. (2009). Participation, roles, and processes in a collaborative action research project: A reflexive account of the facilitator. Educational action research, 17(4), 585-600.

Brookhart, S. M. (2009). Exploring Formative Assessment. The Professional Learning Community Series. Association for Supervision and Curriculum Development. Alexandria, VA.

Chreim, S., Williams, B. E., & Hinings, C. R. (2007). Interlevel influences on the reconstruction of professional role identity. Academy of Management Journal, 50(6), 1515-1539.

The project is implemented under the programme of social cohesion "THALIA 2021-2027" co-funded by the European Union, through Research and Innovation Foundation

Clark, A. M., Zhan, M., Dellinger, J. T., & Semingson, P. L. (2023). Innovating Teaching Practice Through Professional Learning Communities: Determining Knowledge Sharing & Program Value. Sage Open, 13(4).

Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. Teaching and teacher education, 18(8), 947-967.

Coll, R. K., & Taylor, N. (2008). Science education in context: An overview and some observations. In R. K. Coll & N. Taylor (Eds.), Science education in context: An international examination of the influence of context on science curricula development and implementation (pp. xi–xiv). Rotterdam: Sense Publishers.

Fishman, B. J., Marx, R. W., Best, S., & Tal, R. T. (2003). Linking teacher and student learning to improve professional development in systemic reform. Teaching and teacher education, 19(6), 643-658.

Glaser, B. G. (1965). The constant comparative method of qualitative analysis. Social problems, 12(4), 436-445.

Grossman, P., et al. (2001). Toward a theory of teacher community. Teachers College Record, 103(6), 942–1012.

Jenlink, P. M., & Kinnucan-Welsch, K. (2001). Case stories of facilitating professional development. Teaching and teacher education, 17(6), 705-724.

Laws, P. M. (1996). Undergraduate science education: A review of research. Studies in Science Education, 28, 1– 85.

Loucks-Horsley, S., Love, N., Stiles, K., Mundry, S., & Hewson, P. (2003). Designing professional development for teachers of science and mathematics (2nd ed.). Thousand Oaks, CA: CorwinPress

Margalef, L., & Pareja Roblin, N. (2016). Unpacking the roles of the facilitator in higher education professional learning communities. Educational Research and Evaluation, 22(3–4), 155–172.

McLaughlin, M. W., & Talbert, J. E. (2006). Building school-based teacher learning communities: Professional strategies to improve student achievement (Vol. 45). Teachers College Press.

Nehring, J., & Fitzsimons, G. (2011). The professional learning community as subversive activity: Countering the culture of conventional schooling. Professional development in Education, 37(4), 513-535.

Petrone, M. C., & Ortquist-Ahrens, L. (2004). Facilitating faculty learning communities: A compact guide to creating change and inspiring community. New Directions for Teaching and Learning, 2004(97), 63–69. https://doi.org/10.1002/tl.133

Ralston, P. S., Tretter, T. R., & Brown, M. K. (2017). Implementing collaborative learning across the engineering curriculum. Journal of the Scholarship of Teaching and Learning, 17(3), 89-108.

Roth, S. M. (2014). Improving teaching effectiveness and student learning through the use of faculty learning communities. Kinesiology review, 3(4), 209-216.

Slabine, N. A. (2011). Evidence of Effectiveness. Learning Forward (NJ).

The project is implemented under the programme of social cohesion “THALIA 2021-2027” co-funded by the European Union, through Research and Innovation Foundation

Stacey, E., & Mackey, J. (2009). Researching blended learning practices for teachers' professional learning.

Stoll, L., Bolam, R., McMahon, A., Wallace, M., & Thomas, S. (2006). Professional learning communities: A review of the literature. Journal of educational change, 7(4), 221-258.

Tinnell, T. L., Ralston, P. A., Tretter, T. R., & Mills, M. E. (2019). Sustaining pedagogical change via faculty learning community. International Journal of STEM Education, 6(1), 1-16.

Yin, R. (2017). Case study research and applications: Design and methods (6th ed.). SAGE Publications.

6.2 Case-studies on the application of PLCs in public schools

Introduction

This report focuses on a case-study presenting three schools of different levels where teachers collaborated to plan and implement an action plan for their own professional learning through the work of a Professional Learning Community in-site. During the school year 2022-2023, each of these schools was supported by a Cyprus Pedagogical Institute (CPI) member of teacher training staff who acted as a facilitator to investigate needs, set a priority topic and common goals, create a common vision, and work collaboratively to plan and implement actions to promote their own professional learning and their students' learning.

This was achieved through the participation of the schools in the Professional Learning Support Programme offered by the Cyprus Pedagogical Institute (CPI). As a matter of fact, during the school year 2022-2023, a total of forty-three (43) public schools of all levels participated in the Professional Learning Support Programme. All schools had defined their needs through a needs assessment procedure and a CPI member of teacher training staff was appointed in each school and acted as a facilitator. The ultimate aim was to cooperate for the creation of a school-based Professional Learning Community (PLC) towards teachers' professional learning on-site. A member of the school staff was appointed by the school as responsible for the coordination of the whole procedure. The PLC school coordinator worked in close collaboration with the school head-teacher and/or the school leading group as well as with the facilitator from the CPI. The schools implemented certain procedures and tools from the toolkit for that purpose.

Theoretical Background

Schools that function as PLCs have differentiated characteristics both organizationally and functionally. According to Nehring & Fitzsimmons (2011), PLCs are organized on the basis of a culture of trust and professional collegiality, which is associated with a sense of cohesion, readiness for change and a sense of collective identity. The day-to-day operation of the school incorporates cooperation between community members to focus on student's learning, with co-organizing actions, co-teaching, lesson planning and implementation, participation in subgroups, reflective meetings after teachings and other professional cooperation actions. Schools that function as PLCs work systematically to find space and time to focus precisely on student's learning, aligning the work of the learning community with the day-to-day work of the school. They organize focused collective reflection and structured dialogue, for sharing ideas, concerns, dilemmas and questions and getting feedback from within the team. Members of PLCs in schools are organized in sub-groups that act as critical peers to each other in search of best practices to meet the needs and readiness of their students (Sprott, 2019).

There is a number of structural and cultural factors and characteristics that affect the development of a PLC in the complex school environment, reflecting the importance of organismic, psychological, work and cultural factors located inside and outside the school, i.e., the internal conditions of the school but also the external context (political, local and national culture, etc.). For example, in their conceptual framework, Van Meeuwen et al (2020) suggest

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a number of steering factors (leadership, collective autonomy and facilitating group dynamic processes) that interact with a number of context factors of the PLC (professional orientation, group dynamic characteristics, individual and collective learning). The context factors include 11 characteristics: shared vision, shared responsibility, shared focus on student learning, shared focus on continuous learning, mutual trust and respect, collegial support and encouragement, social cohesion, collaboration, reflection, giving and receiving feedback, experimenting. Also, Turner et al (2017) highlight some elements having the greatest impact on the of PLC development and on teachers-leaders: the school culture, teachers' role, their views on the workload it brings, and the management's decision to focus on improving learning outcomes. Turner et al (2017) explained how the interaction of all these factors essentially creates the "zone of proximal development of action", and emphasized the role of teacher-leaders, as only teachers can act as effective agents of change who form and may change school culture. Teachers participating in PLCs are expected to establish relationships and partnerships, to encourage engagement and loyalty, to focus on students' learning, to (re)design effective practices and reflect on actions and decisions. Therefore, teachers' perceptions on the context and the processes through which a PLC functions and evolves is an important issue that needs to be taken into consideration.

At the level of organizational characteristics, the creation of a positive school culture is crucial for the implementation of PLCs, since school culture affects the readiness for change and effective schools form collaborative cultures. Effective leadership and its quality define and cultivate a climate that promotes innovative professional actions and provide time and resources (Antinluoma et al, 2018). Leaders provide opportunities to articulate shared values, ask questions for reflective dialogue, reduce teacher isolation, hear examples and stories that stem from successes that highlight shared values, while promoting an approach and culture that focuses on student learning (Nehring & Fitzsimons, 2011; Brown et al, 2018). The role of leadership for learning (e.g., Hallinger and Heck, 2010) is important for effective whole school learning, through professional learning opportunities that involve leaders and teachers simultaneously, to improve pedagogy (e.g., Robinson et al, 2009, as cited in Australian Institute for Teaching and School Leadership, 2020). Therefore, within the professional learning community, the management team should create the conditions for teachers to teach in a way that ensures the students' appropriate development in key learning outcomes (Robinson & Gray, 2019).

Research Question

This study aimed to investigate which elements emerge in specific school contexts that promote the evolution of a Professional Learning Community (PLC). There was also an effort to see how these were related to the main components of the Professional Learning Support Programme offered by the Cyprus Pedagogical Institute (CPI) and document the use of WP3 (conceptual framework) , WP4 (toolkit), WP5 (training programme) developed in the project.

Data Collection and Data Analysis

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Data for the schools were collected through:

- Facilitators' reflective diaries
- Facilitators' field notes
- Schools' interim and final report

An open thematic analysis (Strauss & Corbin, 2015) was conducted to create categories and subcategories and to see how the use of tools/activities/procedures based on WP3 (conceptual framework), and developed through WP4 (Toolkit) and WP5 (training programme) were related to clusters of elements that affect the evolution of the PLC. In other words, through a descriptive case study methodology (Yin, 2017) the focus was on the four areas covered by the Toolkit (culture, structure, reflection and concept in focus) while dealing with the different phases and the different roles of the Professional Learning Support Programme. Through this way issues such as creating and sustaining common vision and common goals, handling technicalities, leadership and focus on learning and on making learning visible were revealed.

Findings

The main results focus on the emerging issues trying to reflect on similarities and differences between the three schools. There is an effort to compare characteristics and elements that promoted the evolution of the Professional Learning Communities in these schools. Firstly, the three schools are presented separately, as three case studies, and then certain elements are compared.

School Case-Study 1

Profile of the school

School A is a public pre-school situated in a semi-rural community that has been participating in the Cyprus Pedagogical Professional Learning Programme since September 2021. The school is organized in 6 classes (four public classes and two community classes). The staff consists of the head teacher, six early-year teachers as well a special teacher, a speech therapist, since a special needs unit operates at the school- children's companions and teachers' assistants. The members of the staff fulfil different roles and duties and are requested to communicate and cooperate. As regards teaching experience, the head teacher and the teachers working in the public classes have more years of experience than the teachers working in the community classes. Teachers' diverse background and experience is a challenge in developing a professional community of practice. Children are between three and six years old with some children spending most of the day in the class and some hours in the special unit.

Teacher professional learning Programme

As mentioned above the school participates in the TPL Programme and worked in close collaboration with a CPI facilitator since 2021, therefore it was the 3rd year of the operation of a PLC in the school. One staff member had voluntarily worked as a PLC coordinator for the previous two year and continued her role for the 3rd year. The school's first year priority was to enhance children emotional development, while at the second year emphasis was the given

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to the collaboration between the staff. During the first year the light was shed upon the children while at the second year of participation the emphasis was shifted on school culture and climate. Different methodologies were applied mostly during the second year in an effort to bring all members of the school together under a mutual goal. A combination of quality teaching rounds and lesson study methodologies were used in order to enhance the characteristics of a community of practice in the school. The school staff was divided into two different working groups in order to prepare, teach, observe and reflect on a lesson. This was accomplished by the two groups, even though one of them has shown evidence of higher level of collaboration. During the current year, similar practices are implemented with the ambition of having all staff members working as one group.

Roles of the Programme

CPI Teacher Professional Learing Programme request specific roles that are of vital importance. On behalf of the school, two main roles are crucial, namely, the headteacher and the school PLP coordinator. On behalf of the CPI, the role of the school supported is described as a catalyst for the programme. **The school head teacher**, is a person with long experience in her position and from my point of view is a person very well qualified to maintain the balance in the school. During the implementation of the programme she has supported all members of the staff and simultaneously kept boundaries and relationships when challenges were faced. At times the head teacher remained invisible in order to give the opportunity to the school coordinator to blossom, while other time she took power over situation to prevent from loosing control. **The school coordinator,** although it was obvious that she was not completely accepted by the a few members of the staff regarding her role, her personality was vital at times that challenges were faced. Two critical incidents took place regarding the school coordinator role that both led towards her acceptance. The first incident was the fact that during the second year, she volunteered to be the first to teach in the quality teaching round and was also positive of having both the head teacher as well as the CPI facilitator to observe specific children during the lesson. The second incident revealed her genuine ability for reflection and her humble admission of the lessons drawbacks. Those two incidents were crucial not only for the progress of the implementation of elements of each methodology, but mainly for setting the foundations for the unification of the two working groups of the school. As regards **the CPI supporter**, her decision to take things slow and allow the light of the programme to the children during the first year even though from very early on it was obvious that the challenges were related to the staff culture, was a critical juncture. Additionally, the fact that during the second year that the school identified school culture as the main challenge, the school supporter suggested working in different groups. This suggestion was of great importance for the development of the programme. Howere, the most crucial moment of the programme was the supporter's decision to organise a workshop concerning empathy.

Culture of collaboration

Taking into account all the above, building a culture of collaboration in a school is a challenge that a school faces. This specific school, even though it has a small number of staff members, faced a lot of challenges on their journey to build a culture of collaboration and communication. It seems that members of the school perceived their different background and perspective as an

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impediment to their collaboration. The PLP through the supporter has tried to turn their differences into power rather than weakness. Different activities aimed to help the teachers acknowledge and complete each other. The application of the appropriate methodologies as well as allowing time for communication and collaboration helped towards building a robust culture. The collaboration between the different roles of the programme acted as a role model for the wider community of staff members.

Reflection

An important procedure that took place throughout the implementation of the programme was the reflection. The programme provided support and allowed time for reflection. The reflection was evident both on teacher's practices as well as on teachers' behavior with reference to their collaboration.

<u>School Case-Study 2</u>

Profile of the school

School A is a public elementary school in a rural area of Limassol. The school teaching staff consists of 12 teachers and 73 students, distributed in 6 classes, from Year 1 to Year 6. The school is a regional one, which means that students come from different villages around.

Teacher professional learning programme

The school participates in Cyprus Pedagogical Institute's (CPI) Professional Learning Programme since September 2022. The staff of the school applied for being involved in the Programme as the teachers' need assessment showed that they needed support on teaching mathematical problem solving. The students seemed to have different difficulties in problem solving and this made it important for teachers to introduce differentiation as a methodology of learning. By the end of the first year (June 2022) there was an evaluation of students' achievement on problem solving. The results showed that students' achievement in problem solving was improved so, in September 2023, teachers decided to change the theme of their professional learning and focused on embedding technology in their teaching with emphasis again in mathematics.

Roles of the programme

The **headteacher** was well informed for the programme before applying for it. Moreover, she was a positive energy at school and she made herself visible when it was needed, like on finding time on teachers' schedule for a training or a face-to-face meeting. The face-to-face meetings were made between the teachers, the coordinator, a trainer or the CPI facilitator. On the other hand, she made herself invisible when teachers worked together, designed activities and implemented them at their own pace. Teachers trusted her. She was a dynamic figure at school and at the same time she was a distinctive one. For example, when two teachers did not want to collaborate with others, she worked with them, observed and reflected on their teaching, without discussing it with the other teachers at school.

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The **coordinator** was a teacher that he loved working with children and with other colleagues. He liked to try new methodologies and tools with his students and he was open for collaboration. After the first training that was on teaching problem solving with differentiation, he decided to try different techniques with his students and reflect on them with other teachers at school. Because of that, other teachers were willing to collaborate with him, so he started a loop of collaboration and reflection. Moreover, in two cases of colleagues that he felt that they did not like this collaboration he went and discussed with them whether they needed something else to do or change. His moto as a coordinator was 'transparency'. Moreover, he had a good relationship with the headteacher and the CPI facilitator. He also took responsibility for making things happen at school and sometimes he organised things by himself when he felt that was for the good of the teachers at school.

The **CPI facilitator** was selected from CPI as she had a background in mathematics education and research experience in differentiation as a learning methodology. She acted not only as a facilitator of the programme, but also as a teacher trainer on the professional learning theme of the school. She attempted to be visible at school, so except from the whole school meetings, she also had face-to-face meetings with teachers and spend time working with them at school either by designing activities or by observing and reflecting on lessons. The most important role of the facilitator was to support the coordinator as he was a thrust force for actions at school. Moreover, the facilitator was mainly the coordinator of **reflection on activities**.

The **inspector** of the school was informed for the programme, and she was very willing to support it and get involved. She tried to be in present at the whole school meetings either for training or for reflection. This gave to the programme a more formal dimension, although it was clear to everyone that this involvement was not connected to teachers' evaluation. The issue with the evaluation was very sensitive to the staff of the school, so headteacher was very careful on how to handle it. She made it clear that nobody needed to feel that she/he had to be part of the programme to get a good evaluation. So, in the case of the two teachers that they did not want to get involved to the programme or collaborate with other teachers, the headteacher made it possible their evaluation not to be affected by their decision.

Culture of collaboration

The first thing that was adopted to this school, after participating in the programme, was the 'open classroom' culture. This started by the coordinator and supported in a short period of time by other teachers at the school. It is important, that although they are not teaching subjects at the same age of students (there is only one class for Year 1, Year 2, etc) teachers found ways to collaborate. This was achieved either by sharing ideas on designing a lesson plan or by sharing apps and new ideas in implementing technology in their subjects. Only two teachers at school did not want to open their class while teaching, although by the end of last year admitted that it was time to do it.

Reflection

Reflection played a major role in improving not only teachers' lessons but also their bonding and collegiality. Reflection was organised in different ways. There was reflection after school meetings with all the staff, discussing specific issues in the procedure and the results that each

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activity had. These meetings were coordinated either by the headteacher and the coordinator or by the CPI facilitator. At these reflection meetings the inspector was sometimes present. Also, there were individual reflection meetings. The individual reflection meetings were coordinated either with the coordinator or with the CPI facilitator. These meetings aimed to reflect on how each teacher was interacted with others, what and how actions worked for him/her and whether there were other individual needs.

As the theme of the professional learning of the school was directly connected to teaching the Lesson Study methodology was introduced on lessons observations and reflection. Within this context reflection took part after each observation between the teacher that did the lesson, the other teachers that observed it and the CPI facilitator. The reflection was based on particular *critical incidents* that came after observing the reaction of the students when they interacted with particular activities. The outcomes of the reflection many times was to redesign the lesson or from other teachers to get ideas how to introduce a similar app, a similar activity or a technique in the context of differentiation. It is important that this kind of reflection, at some point with some teachers, was done in pairs without the presence of the CPI facilitator.

School Case-Study 3

Profile of the school

School P is a public high school in a rural area in the outskirts of Nicosia. The school teaching staff consists of 79 teachers of all specialities, The student population is 543 students divided into 26 classes/sections who live in the the surrounding villages.

Teacher professional learning programmes

The school participates in the Cyprus Pedagogical Institute's (CPI) Professional Learning Program since September 2021 following the recommendation of the Headteacher and the Assistant Headteacher responsible for professional learning issues in the school. In order to participate in the programme, at the beginning of each school year, a meeting of the teachers' association is held and approval is given by the teachers.

In September 2021, when it was decided that the school would take part in the Teacher Professional Learning Programme the Assistant Headteacher became the school's coordinator for the Programme, a role she had previously held at a high school where she had previously worked and we had cooperated through the role of the school's supporter/critical friend on behalf of the CPI. After diagnosing the needs of the teachers on the issue of their professional learning, it was decided that the theme they wanted to deal with was communication between all stakeholders in the school community (students, teachers, parents) and the first actions started to be planned with the involvement of the teachers who are responsible for each class/section (Ypefthinos Tmimatos). A series of meetings were organised with their classes/sections in which discussions were held on the basis of hypothetical scenarios aimed at improving communication between teachers and students. At the end of these meetings students recorded their contributions, which were then discussed by the teachers and changes were made to the school's operation. This had visible effects on the children's behaviour, as

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both teachers and students themselves said in a questionnaire given at the end of the first year of the programme.

The following year, the school's teachers decided that they wanted to move on to issues more closely related to learning outcomes and creating a learning community, so they formulated their school's theme of professional learning as follows "Interaction between students and teachers to improve the learning process and create a learning community in the school". The theme of communication/interaction remains, but it is aimed more at learning outcomes. It was decided to choose methodologies such as lesson study and quality teaching rounds which through the creation of small groups of teachers and peer monitoring of lessons led teachers to reflect on their daily practice in several cases.

The third year the school continued with the same professional learning theme, but the teachers decided to add another goal, improving communication with students' families to include all the Significant Others that make up a school. To this end, joint seminars for parents and teachers are taking place and meetings on specific topics.

Roles of the programme

The coordination of the Teachers' Professional Learning Programme in this school can be judged as successful due to the significant contribution of the Head teacher and the Professional Learning Coordinator, so I can say with certainty that the contribution of specific roles can play a key role in the development of the programme in this school and in every school.

The Headteacher is a person who considers the professional learning of the teachers in her school to be crucial to improving the school climate in general and learning outcomes in particular. And she strives in every way possible to achieve this, unlike most public high school principals. She makes the most of the existing operating structures in our schools, such as pedagogical sessions, subject coordination hours, etc. In addition, she is constantly present and, by word or example, supports and inspires the school's teachers, facilitating and reinforcing every professional learning effort and action.

For her part, the school's Professional Learning Coordinator is a naturally democratic and inclusive person, and it is precisely because of these characteristics that she has been a strong supporter of the professional learning programme, a programme based on participatory and solidly democratic, bottom-up teacher learning processes. Her major contribution to the success of the programme could be summarised in the following characteristics (in addition to her charismatic personality): a person who shares knowledge and experience, seeks reflection and is not afraid of self-criticism, has a positive spirit and does not give up in the face of practical problems that may arise, handles difficult situations related to human relations in a diplomatic way, knows when a pedagogical leader needs to take a step back to 'show off' a colleague, has good interpersonal relations with the management, teachers, parents and children, has a pedagogical background, which is not self-evident for secondary school teachers and so much more.

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The role of the CPI facilitator has been characterized by the school as important mainly because she encouraged reflection, that is what they consider the main thing, secondly because she gave them some new ideas about methodologies and pedagogical practices and also due to the fact that a person from an external body came to the school, not to control but to support, listen and co-create to mobilise actions and processes that might not have been mobilised to such a great extent under other circumstances.

Culture of collaboration

As the facilitator mentioned from the first meeting at the school and continued to mention every time they met with teachers, the goal was to change from "me and my classroom" to "us and our school". Several steps seem to have been taken in this direction starting with the creation of the professional learning team, a group of seven teachers who, in collaboration with the coordinator, the principal and the supporter discussed which actions to propose to the other teachers, took initiative to implement activities and actions first for the others to follow, etc. Also, a good peer learning culture at school has been created with the peer teaching observations, where the majority of teachers, as they claimed, were helped in their daily practice, especially in their pedagogical decisions.

Reflection

Reflection had an important place in the whole process, it is the element that differentiates this school from other schools that may do more professional learning activities but have not yet reached the point of realizing the value of reflection: stop and think, why I do it, before the action, during the action, after the action. In this school, even if there was not enough time to reflect in person, the members of the PLC and the facilitator talked on the phone and found a way. That element seems to probably be the greatest legacy of the program in the school after the support from the Pedagogical Institute ends.

Discussion

When comparing the data from the three schools many similarities are revealed in the characteristics and elements that enabled PLC evolution. Analysis of the data showed that PLCs were created and sustained in the three schools and key elements that emerged were related to creating and sustaining common vision and common goals, focusing on learning and making learning visible, handling technicalities and structures, creating opportunities for regular meetings (face to face or distance), sharing and collaborating, reflection and developing diferrents facets and defferent levels of visibility as regards leadership.

Despite teachers' diverse backgrounds and experiences, each school developed a mechanism for focusing on a priority issue which was gradually transformed into **common vision and common goals.** These were were continually revisited and reformulated. For example in School 1 during the first year the light was shed upon the children while during the second year of participation the emphasis was shifted on school culture and climate. In School 2, teachers decided to change the theme of their professional learning based on the results of the first year. The teachers in School 3 decided to move on to issues more closely related to learning

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outcomes and during the second year reformulated their school's theme of professional learning while keeping the main idea of communication/interaction. The teachers decided to add another goal, improving communication with students' families.

Focus on learning was identified in all three schools as well as an effort to **make learning visible.** The common ground seemed to be the implementation of **inquiry-based methodologies** that were adopted and adapted in the school context. In school 1 a combination of quality teaching rounds and lesson study methodologies were used. In school 2 sharing ideas on designing a lesson plan or sharing apps and new ideas in implementing technology in their subjects was the invlolvement in lesson studies. Besides in school 2 at the end of the first year the evaluation of students' achievement showed that students' achievement in problem solving was improved and there was a shift in the priority set. In school 3 the positive peer learning culture at school was built on the opportunities for peer teaching observations. The majority of teachers admitted that these professional learning activities had helped them in their daily practice and pedagogical decisions.

Besides since all themes of the professional learning of the schools were directly connected to inquiry-based professional learning methodologies the emphasis was not only on observations but mainly on the main structures of the programme and to **reflection**. Revisitng goals and vision, moving from theory to practice, changing strategies and moving forward implied the presence of reflection procedures. The programme provided support and allowed time for reflection. The reflection was evident both on teacher's practices as well as on teachers' behavior with reference to their collaboration and played a major role in improving not only teachers' lessons but also their bonding and collegiality. Reflection was organised in different ways within schools as well as in different schools. There was reflection after school meetings with all the staff, discussing specific issues in the procedure and the results that each activity had coordinated either by the headteacher or/and the coordinator or by the CPI facilitator. Also, there were individual reflection meetings that aimed to reflect on how each teacher had interacted with others, what and how actions worked for him/her and whether there were other individual needs. Within this context in school 2 reflection took part after each observation between the teacher that did the lesson, the other teachers that observed it and the CPI facilitator, based, on particular critical incidents that came up after observing the reaction of the students when they interacted with particular activities. In school 3 it was decided to choose methodologies such as lesson study and quality teaching rounds which through the creation of small groups of teachers and peer monitoring of lessons led teachers to reflect on their daily practice.

Although reflection ability was not achieved at the desired level, different levels of **collaboration** were identified between and within schools. Despite challenges of time and space all schools found their way to promote cooperation between the staff with the support of the key roles. The members of the PLC and the facilitator could, in some cases, talk on the phone and found a way to cooperate to take things forward.

In school 1 building a culture of collaboration was a challenge despite the small number of staff members, In that school different backgrounds and perspectives were an impediment to collaboration which gradually was overcome by the CPI facilitator who tried to turn their

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differences into power rather than weakness. Different activities aimed to help the teachers acknowledge and complete each other. The application of the appropriate **methodologies as well as allowing time for communication** and collaboration helped towards building a robust culture. The collaboration between the different roles of the programme also was identified to act as a role model for the wider community of staff members. In School 2 the coordinator initiated and was promptly supported by other teachers in sharing ideas on designing a lesson plan or by sharing apps and new ideas in implementing technology in their subjects. In School 3 several steps were taken starting with the creation of the school professional learning team who discussed which actions to propose to the other teachers and took initiative to implement activities and actions first for the others to follow. In School 3, based on the recommendations of the Headteacher and the Coordinator, a meeting of the teachers' association was held at the beginning of the school year for the approval of the whole school staff to be given. So in all cases different small groups were created to work together and showed different levels of collaboration.

As regards the element of school leadership, it was present in all PLCs, in different facets and through all key-roles. Leadership was of crucial important as it permeated all the elements mentioned above as well as **handling technicalities**, stressing at the same time the importance of an empowering and supportive structure (e.g. the toolkit, training for the school key players i.e. school coordinator and school headteacher) and shading light upon the notion of visibility.

In School 1 the head teacher managed to maintain balance. During the implementation of the programme she has supported all members of the staff and simultaneously kept boundaries and relationships when challenges were faced. At times the head teacher **remained invisible** in order to give the opportunity to the school coordinator to blossom, while other time she took power over situation to prevent from loosing control. In school 2 the headteacher was well informed for the programme before applying for it and promoted it through a positive approach **making herself visible** when it was needed while also **dealing with the practicalities** (e.g. finding time on teachers' schedule for a training or a face-to-face meeting) At the same time she knew when to **make herself invisible** when teachers worked together, designed activities and implemented them at their own pace.

School coordinators were also identified as leaders and agents of professional learning. In school 2 the **coordinator** decided to try different techniques with his students and reflect on them with other teachers at school leading other teachers into a transparent loop of collaboration and reflection. In school 1 although t**he school coordinator,** was not completely accepted by all members of the staff, she volunteered to be the first to teach in the quality teaching rounds and showed genuine ability for reflection which gradually led to changing the level and structure of collaborative culture in the school.

As regards **the CPI supporter**, decisions to be by the school, take things slow or faster when necessary, and to promote inquiry-based methodologies and reflection or to decide upon a specific workshops enabled to a great extent the evolution of the PLCs.

Conclusions

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In all three PLCs, teachers were encouraged to rethink their practices and improve them, through sharing and collaborating with colleagues (Prenger et al, 2019). There as a change in school culture identified as well as in practice, although it was not completely clear how exactly improvement was achieved (Turner et al, 2017). It seems that the combination of dealing with the key concept, focusing on the culture, the structures-phases of the programme and on reflection by the different leader-roles enabled collective dialogue (Antinluoma et al, 2018). This resulted to finding space and time to focus on student's learning and align the work of the learning community with the day-to-day work of the school. In each school collaboration perceived a different mode but with a common ground regarding and using the school as an inquiry-inspired and collaborative space "where ideas belong to the group and learning is promoted and valued" (Patton & Parker, 2017, p. 359). Teachers were supported to develop skills that enabled them to respond to the needs of the school staff and to focus on interpersonal relationships (Darling-Hammond et al, 2009, Hollins et al, 2004).

The schools presented in the case study seem to be moving away from an early stage evolution of the learning community (Mclaughlin & Talbert, 2006), towards an intermediate stage in which they start implementing new practices and personal values and behaviors (Nehring & Fitzsimmons, 2011). They seem to have worked systematically with the support of the key - roles to find space and time to focus precisely on student's learning, and align their professional learning to the everyday practice. They focused on on inquiry and on collective reflection for sharing ideas, concerns, dilemmas and questions and getting feedback in sub-groups with the help of the CPI facilitator as well as tools that empowered their peers (Sprott, 2019).

To sum up the three schools in the case study presented enhanced the idea of structural and cultural factors and characteristics that affect the development of a PLC and the importance of organismic, psychological, work and cultural factors inside and outside the school (Van Meeuwen et al, 2020, Turner et al , 2017, Antinluoma et al, 2018). Iti also showed once again that the role of leadership for professional learning (Hallinger and Heck, 2010) is also important for effective professional learning opportunities that improve pedagogy (Robinson & Gray, 2019). At the same time the presence of external facilitators and their interaction with school structure, context and key roles was proved to be crucial for the PLC evolution (Tan & Hairon, 2016).

References

Antinluoma, M., Ilomäki, L., Lahti-Nuuttila, P., & Toom, A. (2018). Schools as professional learning communities. *Journal of education and learning, 7(5).*

Australian Institute for Teaching and School Leadership (2020*). Leadership for Learning: A Review of School Leadership Literature,* AITSL, Melbourne.

Brown, B. D., Horn, R. S., & King, G. (2018). The effective implementation of professional learning communities. *Alabama Journal of Educational Leadership*, *5*, 53-59.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective Teacher Professional Development.* Palo Alto, CA: Learning Policy Institute.

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Hallinger, P & Heck, RH. (2010). Leadership for learning: does collaborative leadership make a difference in school improvement? *Educational Management Administration & Leadership, 38*(6), 654-78.

Hollins, E. R., McIntyre, L. R., DeBose, C., Hollins, K. S., & Towner, A. (2004). Promoting a self-sustaining learning community: Investigating an internal model for teacher development. *International journal of qualitative studies in education*, *17*(2), 247-264.

McLaughlin, M. W., & Talbert, J. E. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement* (Vol. 45). Teachers College Press.

Nehring, J., & Fitzsimons, G. (2011). The professional learning community as subversive activity: Countering the culture of conventional schooling. *Professional development in Education*, *37*(4), 513-535.

Patton, K., & Parker, M. (2017). Teacher education communities of practice: More than a culture of collaboration. *Teaching and Teacher Education*, *67*, 351-360.

Prenger, R., Poortman, C. L., & Handelzalts, A. (2019). The effects of networked professional learning communities. *Journal of Teacher Education*, *70*(5), 441-452.

Robinson, V. and Gray, E. (2019). What difference does school leadership make to student outcomes? *Journal of the royal society of New Zealand*, 49(2), 171 -187.

Sprott, R. A. (2019). Factors that foster and deter advanced teachers' professional development. *Teaching and Teacher Education*, *77*, 321-331.

Corbin, J., & Strauss, A. (2015). Basics of Qualitative Research. Thousand Oaks, CA: Sage.

Tan, C., & Hairon, S. (2016). Education reform in China: Toward classroom communities. *Action in Teacher Education*, *38*(4), 315-326.

Turner, J. C., Christensen, A., Kackar-Cam, H. Z., Fulmer, S. M., & Trucano, M. (2017). The development of professional learning communities and their teacher leaders: An activity systems analysis. *Journal of the Learning Sciences*, *27*(1), 49-88.

Van Meeuwen, P., Huijboom, F., Rusman, E., Vermeulen, M., & Imants, J. (2020). Towards a comprehensive and dynamic conceptual framework to research and enact professional learning communities in the context of secondary education. *European Journal of teacher education*, *43*(3), 405-427.

Yin, R.K. (2017) *Case Study Research: Design and Methods*. 6th Edition, Sage, Thousand Oaks, CA.

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