# Work Package 3:
# PLCs' Conceptual framework

## D3.1 Literature review

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# Consolidated report

This consolidated literature report on PLCs in higher education and public school system, seeks to highlights the main points acquired by a throughout literature review, identify a number of similarities of PLC characteristics and function across the two educational levels, and provide guidance to the further needs of research in this area. We begin with a consolidated definition of PLCs, then pinpoint to the main positive effects of PLCs, identify the PLCs work characteristics and good practices. Then, we briefly discuss the multiple roles of people found in productive PLCs and the notion of managing PLCs everyday technicalities. We finish the consolidated report with a brief discussion about the gaps we have identified in the literature that worth pursuing in the future, identification of possible synergies between the two education levels, and further research in identifying ways to foster the impact of PLCs on teaching and learning. The consolidated report seeks to identifies the main points from the literature, which are then described further in the thorough literature reviews that follow.

## Defining PLCs

Professional Learning Communities (PLCs) is a recent, alternative form of professional development which provides teachers/instructors a productive framework to work as "learners" and schools as "communities of learners" (Clarke & Hollingsworth, 2002). PLC is "a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth-promoting way" (Stoll et al., 2006, p. 223). In this sense, PLCs refer to small groups (communities) of teachers/instructors (professionals) who share professional visions, interests, and values. These teachers/instructors meet on a regular basis throughout the school year, based on the shared notion of learning-for-improvement, exchange expertise, and work together with the explicit purpose for enhancing their teaching abilities and practices (Brookhart, 2009; Margalef & Roblin, 2016; Stoll et al., 2006). In this sense, PLCs are directly related to teachers'/instructors' daily teaching practices, and PLCs' participants work to identify common issues they face in their everyday teaching, and identify and apply solutions by opening up to one another trustfully. In public schools, PLCs are particularly effective in fostering collaboration allowing for personal, professional as well as community development whilst, concurrently, improving teaching and learning through reflective and inquiry-based approaches (Voelkel & Chrispeels,2017; Nehring & Fitzsimons, 2011; Woodland, 2016).

## Terminology

Professional Learning Communities (PLCs) have been extensively explored and implemented in various educational contexts, ranging from public lower to secondary as well as higher education institutions. In this review, the term 'teachers/instructors' will be used interchangeably to reflect the broad application of PLCs across the aforementioned educational levels. While 'teachers' typically refers to educators in public schools, instructors is more commonly used in higher education. The inclusive terminology emphasises the adaptable nature of PLCs in promoting professional development and collaborative learning in diverse learning environments. This review emphasises the adaptability of PLCs and the transferability of research insights in meeting professional learning needs in different levels of education.

## Positive effects of PLCs

PLCs have been promising for the expansion of teachers'/instructors' professional learning. Research has highlighted a number of positive effects of the involvement of teachers/instructors in PLCs, related to their satisfaction, attitudes and applications in


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practice. These include: (i) an increase in the motivation of improving teaching practices (Roth, 2014), (ii) a reduction of the sense of isolation and burnout (Prenger et al., 2019; Roth, 2014), (iii) an improvement of teachers'/instructors' knowledge, skills, and teaching practices, and thus students' learning (Roth, 2014; Darling -Hammond et al, 2009; McLaughlin & Talbert, 2001), (iv) an increase in collaboration among colleagues (Stacey & Mackey, 2009). Therefore, teachers'/instructors' involvement in PLCs enhances the overall capacity of their school/organization. In the public school context, PLCs have demonstrated positive impacts on teachers' satisfaction, attitudes and teaching practices. Specifically, PLCs contributed to reducing feelings of isolation, enhanced school capacity and improved learning (Darling- Hammond et al.,2009; McLaughlin & Talbert, 2001; Prenger et al.,2019).

Important characteristics of PLCs

There are several characteristics that have been highlighted by the literature describing the productive teachers'/instructors' PLCs (Bolam et al., 2005; Stoll et Earl, 2003). These can be merged into the following: (i) *Sharing common values and vision*. Productive PLCs' participants need to share common values and visions, on which communities' actions are decided based on. A shared vision should foster the genuine commitment of all PLC members.(ii) *Reflection and reflective professional examinations*. PLCs' teachers/instructors need to engage in reflective professional inquiry through reflective dialogue in order to discuss problems of the educational practice and to share and generate knowledge through interaction (Margalef & Roblin, 2016). This process is vital to discussing educational practice challenges and developing knowledge through interaction (Margalef & Roblin,2016). In public schools this reflective practice is fundamental and is structured around inquiry-based approaches and a cyclical learning process that enhances the effectiveness of the discussions (Hollins et al.,2004; Darling-Hammond et al.,2009) (iii) *Collective responsibility for student learning*: The mission in a PLC should not be constricted to simply ensuring that students are taught, but the focus should shift to ensuring that students learn through meaningful and productive learning opportunities (DuFour, 2004). Towards this goal, teachers/instructors in PLCs need to share a sense of responsibility for their students learning (King & Newmann, 2001; Leithwood & Louis, 1998; Kruse et al., 1995;), a principle that is fundamental in both higher education and public school contexts ( King & Nwemann,2001; Leithwood & Louis, 1998; Kruse et al.,1995) (iv) *Individual and group professional learning*: PLC work needs to promote both group as well as individual professional learning. (v) *Supportive and shared leadership*: PLCs' teachers'/instructors' work should be characterized by their collaboration focused on learning by working together (Margalef & Roblin, 2016). This is particularly apparent in public schools, where the collective learning model leads to the formation of a collective educational theory which guides teaching practices.

Good practices

PLCs work and functions are based on the development of a community of professionals with a shared vision and culture (Cox, 2002). To develop and establish productive PLCs, their members need to work in a safe and supportive environment, which provides opportunities to share and reflect upon ideas, successes, and challenges and promotes community building and informal learning (Tucker & Quintero-Ares, 2021). As research supports (Gerken et al., 2016), informal community spaces created important learning opportunities for their members. The critical aspects of PLCs function, also include the members constitution (may affect members' communication and collaboration) and meetings' structure. To this end, is important to be given time and space for the community's development and then, through collective dialogue decisions for implementations and actions to be taken. In this direction, the implementation and the changes in teachers'/instructors' teachings (at least at the first stages) need to be small in scale, in order


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to have opportunities for evaluation and reflection. The development of a shared vision and culture within PLCs in public schools, is aligned with a focus on learning, including co-teaching, lesson planning and structured dialogue for reflective practices (Stoll et al.,2006; Antinluoma et al.,2018).

Multiple roles in PLCs

Research has identified a number of different PLC participant roles for the smooth operation of PLCs. Among them, the role of the PLC coordinator and facilitator is of great importance. Teachers/instructors with insider knowledge of their school/department context, are usually called to lead a PLC as coordinators (Wenger, McDermott & Snyder, 2002). Coordinators in PLCs do not 'lead' in a conventional manner but instead gather professionals together and guide the community towards determining its path by understanding their development phases and identifying steps for their evolution (Wenger, McDermott & Snyder, 2002). Their role is crucial for the PLCs' organization and operation, although they may face several barriers and challenges. In this direction, PLC leaders who act as coordinators need to be supported by a number of tools and strategies in order to productively promote their PLC (Turner et al, 2017; Wenger, McDermott & Snyder, 2002). Additionally, the external facilitator's presence has also highlighted as crucial for the PLC operation. The facilitators can contribute to making the work of the communities more productive by coordinating, creating a proper working environment, and strengthening the ability of the group to generate knowledge about their own teaching (Avgitidou, 2009; McLaughlin & Talbert, 2006). The facilitator is responsible for creating an environment that gives participants opportunities to learn by (1) helping them to stay focused and ensuring continuity in the meetings, (2) stimulating reflection, (3) providing access to relevant resources, (4) providing continuous feedback and (5) helping participants to generate knowledge from their own practice (McLaughlin & Talbert, 2006; Ellerani & Gentile, 2013). The external PLC facilitator should be in close collaboration with PLC leaders (coordinators).

Managing technicalities

The operation and development of PLCs require several elements related to facilitating the participation and interaction of PLC members as well as supporting their learning. Participation in PLCs requires that the work done in them is aligned with teachers'/instructors' everyday teaching practice and that their participation develops them as professionals. PLC work is positively affected when, through restructuring of existing organization's arrangements, the space and necessary time is provided to teachers/instructors for discussion and reflection (Stoll et al, 2006; De Neve & Devos, 2017; Hord & Sommers, 2008; Leclerc et al, 2012; Hairon & Tan, 2017). In addition, productive PLCs require strategic planning for meaningful and effective cooperation between their members (Hargreaves & O' Connor, 2018), as well as creating circumstances for considering different perspectives and making evidence-based decisions (Fullan & Pinchot, 2018). In this direction, it is important to further explore the ways in which cooperation between teachers/instructors can be facilitated, but also the arrangements that need to be made, in order to consolidate teachers'/instructors' professional learning through the PLCs. Additionally, aligning PLC work with daily teaching practices and restructuring school arrangements to create space and time for regular collaboration and reflection is crucial for teachers (Stoll et al.,2006; Hairon & Tan, 2017).

Stages of evolution of PLCs

Mclaughlin & Talbert (2006) have proposed that the work of PLCs goes through a 3-stage schema, which may provide a useful tool for recognizing the work in PLCs, PLC participants' needs, and the support required. At the same time this scheme may also be a useful tool for describing the work carried out in PLCs. Their scheme suggests that at the beginning of the


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PLC work, the work caried out related to changes sought, new emphases or any new tasks and demands are usually associated with somehow a sense of pressure or frustration amongst teachers, as they are guided to identify ways of monitoring their own practices, and collect appropriate classroom-based data to examine what constitutes evidence of progress. At this stage, Mclaughlin & Talbert (2006) suggest, teachers begin to develop research skills, formulating questions, identify concerns and pinpoint to perspectives useful for analyzing data related to the issue of concern of their PLC. A second stage of learning community development, teachers start using a circular process of implementing new practices and seeking small improvements. Despite the difficulties of connecting research with practice, and the possible resistance of teachers to the new way of group operation, at this stage they turn to reflection, begin to collaborate with each other and make decisions about their PLC work, thus contributing to the identification and consolidation of common goals. They also gain procedural knowledge that helps them understand how they can work more productively together. In the third stage of their scheme, Mclaughlin & Talbert (2006) suggest that the development of the actual learning community takes place. The teachers in the PLC work to investigate questions and collect and gather data on the basis of which decisions for actions are made. A sense of shared responsibility guides their decisions to pursue progress, as well as systematic investigative processes, which are embedded in the operation of the school organization. In the three-stage model, teachers navigate from initial resistance and frustration to a stage where they reflect collaboratively and share responsibility (McLaughlin & Talbert, 2006).

Gaps in the literature that worth pursuing.

Given all the points above, we suggest that PLCs as a way of improving teaching and learning in schools and universities may be a very powerful approach. Despite the identification of characteristics that define productive PLC work, the various participant roles that are crucial for PLC functionality, and the description of productive functions of PLCs, there remains limited research on the everyday operations and functions within PLCs to date. Thus, we suggest that there is need for more detailed studies about the function of PLCs, something that also relates to our deliverable D6.2 concerning the description of two case studies from the application of the PLCs in the project. A case study could be one of the ways that this need may be addressed. Additionally, based on a number of shared characteristics in PLCs at the higher education level and the public school system level, it is also important that in the future, research focuses on potential differences between the two education levels that are related to the productive function of PLCs in these different contexts. We also feel that D6.2 may be a way of contributing to this need. Finally, given the limited research work in higher education PLCs, there is a clear need for further studies in this area, which also should be addressed in this project. The need for research identified is twofold; first exploring the functioning and daily operations of PLCs and secondly to explore specific roles within PLCs, their importance and how these differ between higher education and the public school systems.

Areas of synergies between the public school and the higher education level.

Research on PLCs has predominantly focused on school settings, offering valuable insights into collaborative learning and professional development. However, the application of PLC principles in higher education is less explored, revealing a significant gap in the literature. This suggests an opportunity for cross-level study to understand how PLC strategies can be adapted in higher education and how PLC practices in the two educational levels can co-inform each other so as to promote the identification of innovative practices as well as a more comprehensive understanding of PLCs across the two educational levels. While direct comparisons of PLC dynamics between public school and higher education are limited, research in PLCs in the two different educational contexts has uncovered multiple


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foundational PLC principle similarities in the operational dynamics of PLCs, an important opportunity of this project is to bridge the two educational levels and explore ways and areas of synergistic potential. It is hypothesized that the successful strategies and tools employed in school based PLCs could offer valuable insights and adaptable practices in higher education level PLCs. A possible start involves the sharing of existing knowledge (mostly in the public school level) regarding resources such as tools and activities that can be used by PLC coordinators in order to help support the various work tasks that take place in the PLCs. These resources can significantly benefit PLC coordinators across both educational levels as addressed in the D4.1 deliverable under WP4 of this project. Moreover, the exchange of experiences in supporting PLCs in the two education levels could act as a catalyst for innovative approaches and strategies that can inform , WP4 and possible WP6. Here it is important to acknowledge and embrace the diversity of experiences and needs of PLC coordinators/facilitators/instructors in the two different education levels as this may lead to different ways of handling particular needs or fulfilling particular tasks. However, this can offer a fertile ground for learning and adapting so as to approach each educational level with context-based solutions that can provide insights to the broader educational spectrum. The cross-reference of ideas and practices will enrich the PLC model but also contribute to a more spherical and integrated approach to PLCs in education.


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# Literature review - Professional Learning Communities in higher education

## Introduction

For decades, the professional development of teachers/instructors followed models which involved an expert delivering information to teachers/instructors seeking to influence their teaching strategies, while teachers had a rather passive role (Clarke & Hollingsworth, 2002). These approaches received wide criticism as they mostly failed to make meaningful connections with the teachers'/instructors' classroom realities (Dorier & Maaß, 2012). One-shot-trainings proved to have limited connections to the classroom everyday activities (Lipowsky & Rzejak, 2015).

During the past decades, research has investigated and documented the benefits of collaborative teaching techniques for student learning (Johnson, Johnson, & Smith, 1998; Prince, 2004; Springer, Stanne, & Donovan, 1999). Among the documented benefits, research has highlighted improvements in student achievement and student attitudes, the quality of student interactions, student self-esteem, and student retention. We follow Barkley, Major, and Cross's (2005) definition of professional collaborative learning to include all types of structured forms of small-group interactions between professionals.

An alternative form of professional development that provides teachers/instructors a context in which teachers/instructors work as "learners" and institutions as "communities of learners" (Clarke & Hollingsworth, 2002), known as Professional Learning Communities (PLCs) has led to a paradigm shift of professional development of teachers/instructors (Vescio et al., 2008). As defined by Stoll et al. (2006) a PLC is "a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth-promoting way; operating as a collective enterprise" (p. 223). Therefore, PLCs refer to small groups (communities) of teachers/instructors (professionals) that share professional visions, interests, and values, that meet on a regular, continuous basis throughout the school year, based on the shared notion of learning-for-improvement, exchange expertise, and work together with the explicit purpose for enhancing their teaching abilities and practices (Brookhart, 2009; Margalef & Roblin, 2016; Stoll et al., 2006), identifying common issues they face in their everyday teaching, and identify and apply solutions by opening up to one another trustfully about routines and obstacles.

## Professional Learning Communities (PLCs) as a dynamic form of professional learning

PLCs have been defined as a powerful tool for school development and improvement. In this context, the quality of education is heavily based on teachers continuously reflecting, renewing and enhancing their professional knowledge and skills (Darling, Hammond, Chung Wei, Alethea, Richardson & Orphanos, 2009). The application of PLCs plays an important role for teachers' and school improvement throughout Europe (e.g., Lee & Louis, 2019), due to their positive contributions to professional development, teaching effectiveness, and eventually, student learning.

In the context of PLCs, improving teachers' professional knowledge becomes an important step for improving schools (e.g., Ellerani & Gentile, 2013; Bonsen, 2006; Robinson, Hohepa & Lloyd, 2007; Scheerens, Glas & Thomas, 2003). Professional Learning (PL) should be continuous, sustained, structured and intensive in nature, as well as a collaborative approach to improving teachers'/instructors' effectiveness (Slabine, 2011) and enhancing student learning experiences.

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PLCsinclude both activities and processes designed to improve teachers'/instructors' professional knowledge, expertise, and skills, (Guskey, 2000), provide a way to discuss and communicate teaching knowledge, skills and resources about teaching and learning (Roth, 2014) seeking to bring meaningful changes in aspects of teaching strategies (Fraser et al., 2007) by engaging teachers/instructors in active learning (Garet et al., 2001; Loucks-Horsley et al., 1998) and conversations about everyday teaching situations (Louca et al., 2013; Philippou et al., 2015). This active teacher learning may take a number of forms, including observation of expert teachers, observations of other colleagues, exchanging interactive feedback, and reflection on and about student learning (e.g., Banilower & Shimkus, 2004; Borko, 2004; Carey & Frechtling, 1997; Darling- Hammond, 1997), and evaluation of the effectiveness of teaching changes implemented (Roth, 2014). This process ultimately provides teachers/instructors with ways to improve their content knowledge and teaching strategies, identify the need to improvement, and helps them identify ways to apply changes in their teaching with the ultimately goal to enhance their students' learning (e.g., Fishman, Marx, Best & Tal, 2003; Loucks-Horsley et al., 2003).

The heart of PLCs is in nature a data-driven process that includes systematic reflection and review of the current teaching ideas, strategies, knowledge and constructive critique of participants' teaching practice through reflections, observation of teachers'/instructors' practice, and joint ideas for changes (Stoll et al., 2005). This way, PLCs provide teachers/instructors with opportunities to refine and improve their own teaching through a systematic approach that includes both investigation of and experimentation with their own teaching including collecting, analysing and reflecting upon teaching and learning evidence. Such communities have been regarded to promote work-based learning, defined as learning for work, at work and from work in a form of experiential learning(Steinert, 2010)Existing literature has highlighted five characteristics related to productive teacher/instructor PLCs (Bolam et al., 2005; Stoll et Earl, 2003). These include (i) sharing common values and vision, (ii) reflection and reflective professional examinations, (iii) collective responsibility for student learning, (iv) individual and group professional learning, and (v) supportive and shared leadership (Bolam et al., 2005; Hord, 1997). As per Steinert's (2010) views, professional communities emphasise viewing work experience as opportunities for learning and development, and such opportunities, albeit underutilised, should be integrated into professional development strategies.

Firstly, members of productive PLCs share common values and visions, on which PLCs' actions are based on. A shared vision would support the commitment of all participating teachers towards the common goals of a PLC group. Secondly, teachers/instructors in PLCs need to have a collective responsibility for their students learning (King & Newmann, 2001; Kruse et al., 1995; Leithwood & Louis, 1998; DuFour, 2004). Thirdly, teacher/instructor PLCs should engage in reflective professional inquiry focusing on problems of their everyday teaching practice, and sharing and generating knowledge (Margalef & Roblin, 2016). Fourthly, PLC members' collaboration should focus on learning (Margalef & Roblin, 2016). To achieve that, PLC structures that would promote a collaborative culture play an important role (DuFour, 2004). Lastly, PLCs need to promote both individual and group and professional learning. In this sense, teachers/instructors learn from one another through the meaningful interactions generated within the community (Stoll, Bolam, McMahon, Wallace & Thomas, 2006).

### Higher Education Faculty Professional Learning Communities

Although a recently growing number of studies have investigated the use and function of PLCs at the primary and secondary education levels, there has been to date relatively limited investigation of PLCs in higher education (e.g., Laws 1996) and even a slower growth


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of the implementation of this idea in higher education settings (Palmer, 2002), despite the growing interest in higher education student learning outcomes and innovative approaches to teaching (Terry, Zafonte, & Elliott, 2018). For instance, Massy, Wilger, & Colbeck (1994) found that collegiality in university departments is "hollowed", with a common sense of community usually absent from meetings, curricular planning, and pedagogical work. Despite that, Cox (2004) indicated that faculty PLCs (fPLCs) can play an important role in faculty development with evidence suggesting that both student and faculty learning is improved through this process. While the need to identify productive ways within fPLCs with which faculty members may engage in long-term pedagogical changes in their teaching approaches has been highlighted as important (Cox, 2004; Richlin & Cox, 2004), there is to date very little evidence whether these changes may be sustainable in the long term (Tinnell, Ralston, Tretter & Mills, 2019).

**Characteristics of fPLCs**

A fPLCs is usually an intentionally developed community (Love, 2012) of a group of faculty members from various fields and disciplines (Roth, 2014) cohort-focused, or issue-focused groups engaging in an active collaboration over a significant period of time (Roth, 2014; Tinnel et al., 2019; Mooney, 2018), with the explicit purpose to impact their teaching, and productively and meaningfully enhance student learning (Cox, 2003). fPLCs provide flexible but structured "intensive professional development opportunities designed to provide encouragement, support, reflection, and community building" (Ralston et al., 2017, p. 91). fPLCs seek to engage participating faculty in processes that would enable them to share their teaching experiences and knowledge with other members of their university community (Cox, 2004), to learn from one another and push towards common learning goals (Roth, 2014). Additionally, in some studies, these communities have extended beyond merely providing support and advice, to being actively involved in seminars, retreats, national conferences and collaborative projects (Cox, 2017)The literature suggests that fPLCs foster professional growth and pedagogical innovation in faculty's teaching (Furco & Moely, 2012; Richlin & Cox, 2004); increase faculty interest, motivation and confidence in teaching; promote active, learner-centred approaches to teaching and learning; lead to improved student learning (Cox, 2001; 2003; 2004).

Despite the differences in the particular contexts (Coll & Taylor, 2008), PLCs, originally adapted from the business sector to the school environment (Vescio et al.2008) have retained their core characteristics when adapted to higher education settings. These core characteristics include the focus on a particular content, their nature and complexity; focusing on the students' struggles and learning difficulties with the content; an emphasis on the enhancement of practical teaching skills (Coll & Eames, 2008).

fPLCs may be also seen as particularly important and necessary within the context of higher education. Due to the nature of the university teaching environments, it is likely that instructors often resolve to isolated teaching practices, mostly working on their own. The difficulties of building a positive learning culture and developing mutual trust among faculty members (Alles et al. 2019) may be related to this faculty isolation (Hargreaves 2007; Alles et al. 2019). Due to these difficulties, it may take up considerable time to develop productive fPLC culture within universities, deeming even more important the need for investigations about fPLCs that would lead to theoretical models accounting for the operational characteristics for building, running, and sustaining fPLCs (Wen & Zhang, 2020). fPLCs have been described as a persistent, sustaining social network where individuals share and develop mutual knowledge, beliefs, values, past and current experiences focused on mutual practices (Steinert, 2010).


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One of the important characteristics that fPLCs offer to the university teaching community is the engagement of instructors in evidence-based teaching strategies and evidence-based improvement of their teaching practices (Tinnel et al., 2019; Ralston et al., 2017; Ralston, Tretter, & Kendall-Brown, 2017), grounding faculty professional development on how students learn (Borrego & Henderson, 2014). The success of such communities lies on several factors including the existence and sharing of a common goal, utilising collective knowledge as a means to achieving that goal, as well as, and most importantly, fostering an environment that allows for the development of relationships among community members (Steinert, 2010).

Acknowledging the differences between public school education and higher education centred on professionalisation, collateral insights in the application of PLCs can still be drawn. Both educational levels share a common goal of enhancing learning outcomes, regardless of the differing methods. The core principles of PLCs, including and not limited to, collaborative learning, reflective teaching practices and addressing diverse learning needs, are applicable in both contexts. While the settings and approaches differ, the underlying objectives of improving teaching effectiveness and student learning outcomes are aligned.

**Working in fPLCs**

The literature suggests that among the important things of fPLCs is the members constitution, which may affect the creation and better facilitation of a collaborative culture. Cox (2004) described two categories of fPLCs: cohort-based and topic-based. Cohort-based fPLCs address particular professional needs (including but not limited to teaching and learning) of specific groups of faculty that have been for any reason isolated, traditionally neglected or unusually stressed. Topic-based fPLCs are usually put together to address a specific campus-wide teaching and learning issue or need. The coordinator collects proposed topics from the faculty members, decides on particular topics that are popular among faculty, and advertises a call for participation in the fPLC(s) across campus.

Similar to teachers' PLCs, fPLCs' work and functions are based on the development of a community of professionals with a shared vision and culture (Cox, 2002; Tovar et al.,2015). In a study, Mu and Gnyawali (2003) reported that across institutions, ten qualities are very important in the function of fPLCs which support the development of a community culture that promotes professional learning among faculty. These include safety and trust, openness, respect, responsiveness, collaboration, relevance, challenge, enjoyment, enthusiasm and devotion, and empowerment. These characteristics play a crucial role in establishing what Tucker and Quintero-Ares (2021) name as a collaborative space that would be open to dialogue and will support and promote community building and informal learning. In their study, Gerken et al. (2016) suggested that informal community spaces created important learning opportunities, which they suggest are important for brainstorming ideas, discussing instructional practices, and sustaining proactive relationships with colleagues to seek and offer feedback. As Steinert (2010) states, when working in such a community emphasis should be placed in valuing the community all in all, celebrating its existence and creating opportunities for exchange, support and sustaining relationships.

Ralston et al. (2017) suggested that time for working with colleagues and structure for the fPLC meetings are critical aspects of fPLCs, along with working within a safe environment for all participants to share and reflect upon ideas, successes, and challenges.

As research also supports (e.g., Ralston et al., 2017), actions within fPLCs are also crucial for the work of the PLC groups. These actions may include in addition to discussions, peer observations, planning and implementing new ideas, analysis of results, and reflections. As


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important, the implementation of changes from participating faculty in their teachings should be slow, and small in scale, in order to afford opportunities for evaluation, revision, and trial.

### Positive outcomes & impacts of fPLCs

While the importance of PLC has been known for a long time (Bullough, 2007), direct empirical evidence from higher education has been a more recent focus of research (Roth, 2014). In this section, we highlight some of the most important points identified.

Stacey & Mackey (2009) highlighted that positive outcomes from benefits of fPLCs may include instructors' better conceptualization of their own teaching philosophy, an increase in their confidence (Tovar et al., 2015) in revising and applying new teaching strategies (Hadar & Brody, 2010; Ash et al., 2009), an increase of the collaboration among colleagues even outside of one's own department and nourishing the scholarship of teaching (Cox,2017). Of course, fPLCs have been also found to be successful in impacting positively student learning (Butler et al., 2004; Jetton, Cancienne & Greever, 2008; Tovar et al., 2015) with positive results in areas like grades, course completion, student retention, academic success and satisfaction, regardless of the size or type of the community (Love, 2012) Further, Roth (2014) suggested that additional benefits of fPLCs include a possible increase in the instructors' motivation to improve their teaching practices, as well as willingness to experiment with new methods (Tovar et al., 2015) reduction of instructor burnout, and improvement of the teaching practices for active student learning (Roth, 2014). Moreover, collaboration and collegiality is promoted (Steinert, 2010) with faculty reporting enhanced engagement and integration of ideas and experiences due to their involvement (Love, 2012) and most importantly a sense of reduced isolation (Tovar et al., 2015).

Key success factors to the fPLCs included the appropriate embedment of support structures, readiness for change, and flexibility and responsiveness to faculty needs (Tovar et al.,2015). This flexibility and responsiveness allowed the community to dynamically evolve, addressing faculty needs effectively and maintaining relevance. Initially the program was structured with predefined topics but then became more flexible allowing members to propose their own topics and organically develop emerging opportunities based on their current needs (Tovar et al.,2015). They also found that discipline specific communities, despite deviating from the general literature recommending cross-disciplinary approaches, can effectively foster teaching and learning discussions (Tovar et al.,2015).

From a wider lense, PLCs have been reported to influence both educational and organizational policies and practices, shifting the institutional culture towards a learning organization through with more integrative and collaborative practices through the creation of microcultures within the institution.

### Tools and approaches used during the covid-19 pandemic

During the years of the covid-19 pandemic, all the aspects of school-related work and development we substantially disrupted. Among others, the work of teacher/instructors PLCs was also disrupted. At the same time, through the difficulties encountered, many opportunities for professional growth emerged, which utilized characteristics of fPLCs.

Tucker and Quintero-Ares (2021) highlighted that during this pandemic, but also any pandemic, the notion of the community has been vital as a tool for responding to the professional isolation because of the various (in some cases significant) changes in professional work of higher education instructors. They also suggest that in any crisis, the establishment or the existence of communication "channels" for higher education faculty are very important in providing ways for peer support. In this context, working with aspects of fPLC, such as collaboration, can open opportunities for supporting and/or mentoring


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between faculty, exchanging of knowledge and experience with new ways of teaching (e.g., technological tools for teaching during the pandemic). Due to that, fPLCs around the globe were "forced" to be formed as or changed in nature to become online or virtu al fPLCs.

The implementation of fPLCs typical demands a significant investment of time and dedication, often leading to reluctancy among faculty staff. Such resistance often favors single one-time professional development initiatives over continuous fPLCs (Hurtado et al., 2010). This emphasises the necessity to clearly explain the benefits and impact of fPLCs, as recommended by Roth (2014). Considering the shift towards online education that has been partially driven by the Covid-19 pandemic, an approach to engage faculty in fpLCs involves the creation of virtual fPLCs that offer greater flexibility, allowing both in-person and remote participation through synchronous and asynchronous methods and consequently broadening accessibility and convenience for faculty members (Roth, 2014).

In their study, Tucker and Quintero-Ares (2021) found that fPLCs during Covid-19 seemed to provide faculty with a balanced support among peers (through informal exchange of experiences and ideas), and experts such as more knowledgeable faculty and instructional designers. At the same time, many institutions and faculty have reported that due to covid-19, they had opportunities to meet, trust, and work with colleagues that have not collaborated in the past, from different departments creating a culture of community within a virtual collaborative space (Rapanta et al., 2020) sharing the same concerns, ideas to solve problems, and experiences. Studies such as the one from Avgerinou and Moros (2020) indicated that a sense of community and the formation of collective knowledge supported a shift to virtual teaching during codi-19.

In a different study on simulated crisis, Öberg et al. (2019) identified 4 aspects that play an important role in community engagement during a crisis: the creation of different groups, the formation of partnerships between peers, value creation, and visibility in PLCs. At the same time, the roles of people both within and outside PLCs shifted or altered during the pandemic (e.g., Netolicky, 2020; Beauchamp et al., 2021; Rasmitadila et al., 2020; Rasmitadila et al., 2020; Koumarianou & Louca, 2022), indicating a further need to possibly investigate the ways fPLCs function in the post covid era. These characteristics include among others the nature of the participants reflections during online PLCs, the role of the PLCs' participants, the use of tools for communication and collaboration, as well as the role of the PLC coordinator.

A study conducted in 2010 on the benefits of hybridised online faculty development communities (Brooks, 2010) offers valuable insights that have become even more pertinent during the Covid-19 pandemic, as the shift towards remote learning and the need for adaptable technologically-driven professional development practices have become crucial. The study suggested that blending online and face-to-face traditional interactions can create a flexible and accessible environment for faculty development that offers both practical assistance and social connections. Initially, the benefits of hybridised faculty development include the facilitation of faculty engagement for professional development beyond traditional work hours and physical settings, offering diverse modes of interaction through readily accessible online resources and discussions, to promote inclusive while accommodating faculty members with different preferences, constraints or disabilities. Additionally, the hybridised method allows for broader reach by connecting faculty beyond geographical and institutional boundaries and thus creating larger and more diverse communities of practice that extend beyond a single institution.

Research findings including those from Alsaleh (2021), Louca et al. (2021), and Koumarianou & Louca (2022) indicate ways in which the Covid-19 pandemic has acted as a catalyst, reshaping the characteristics of fPLCs as well as their functionality. The adaptation


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to online tools for asynchronous communication such as that of collaborative reflection walls and instant messaging platforms (e.g Whatsup) has been fundamental in maintaining continuous interaction among members. Furthermore, the integration of digital tools to support student learning and the utilisation of online platforms for synchronous fPLC meetings has allowed for adaptations in the way fPLCs run. These adaptations have not only allowed the addressing of challenges related to the pandemic but also offered an opportunity to explore preferences for meeting formats; face to face, online or hybrid. The utilisation of various online tools to enhance communication and reflection emphasised the need for more research aiming to understand the needs of faculty members in these communities, assess the effectiveness of different tools used and fostering a productive and engaging environment for educators and students.

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# Literature review – Professional Learning Communities in public schools

## Professional Learning Communities – Evolution

PLCs have been a promising low-stakes pathway for school-based teachers' professional learning. In PLCs, groups of teachers share and critically research their practices in a constantly reflective, learning-oriented thinking (Voelkel & Chrispeels, 2017) aiming collaborative integration, personal and community development, as well as improvement of teaching and learning. PLCs follow inquiry-based approaches in-site for collective teachers' deep learning through focused discussions, decision making, action and reflection (Nehring & Fitzsimons, 2011; Woodland, 2016; Gore & Rosser, 2020; Van Meeuwen et al, 2020; Antinluoma et al, 2018, Stoll et al, 2006).

PLCs emerged while research investigated effective routes to improve teaching and learning outcomes (Darling-Hammond et al, 2009; Dufour & Dufour, 2012; McLaughlin & Talbert, 2006; Woodland, 2016), as research combined the concept of reflection, as a central element of the human intellect, and the concept of learning within an organization, as a pathway towards the improvement of educational organizations (Nehring &Fitzsimons, 2011). PLCs are characterized as the best, most economical, and most professionally rewarded way to improve the school and create hope for improved teaching (Dufour, Eaker, & Dufour, 2005), as they improve professional and school culture (Antinluoma et al, 2018; Turner et al, 2017) by giving meaning to the learning environment and by increasing the well-being of children and teachers (Prenger, Poortman & Handelzalts, 2019).

Prenger et al (2019) highlighted positive effects of PLCs on teacher satisfaction, attitudes and applications in practice. Despite the initial stage of development of the PLCs, it became clear in their research that the involvement of teachers in the networking of PLCs is promising for the expansion of their professional learning. PLCs influence teachers' satisfaction and self-sufficiency, as well as their ability to collect and analyze multiple types of data regarding children. They also reduce teachers' sense of isolation, and they contribute to the creation of a collective culture for high-quality teaching practice, enhancing the overall capacity of the school organization (Talbert, 2010; Woodland, 2016; Stoll & Louis, 2007; McLaughlin & Talbert, 2006; Vescio, Ross & Adams, 2008; Caprara et al, 2006). PLCs increase the knowledge and skills of teachers and, thus, children's learning (Darling -Hammond et al, 2009; McLaughlin & Talbert, 2001). When teachers collaboratively explore ways of overcoming obstacles to their students' learning, they achieve broadening of experiences and sharing the most successful of them, effectiveness and improvement of their learning and improvement of performance regardless of school context and socio-economic profile (Verscio et al, 2008; Andrews & Lewis, 2004; Elmore, 2002; Goldenberg, 2004 στο Welsh Government, 2011).

Within a PLC, teachers are encouraged to rethink their practices and improve them, through sharing and collaborating with colleagues (Prenger et al, 2019). PLCs seek learning for all teachers in the school community through cooperation, where members share the common goal for improving learning outcomes. Developed PLCs are characterized by changed culture and practice, although it is not clear how they develop and how improvement is achieved (Turner et al, 2017). Collective dialogue within PLCs focuses on reflecting and highlighting each member of the community as a personality and as a professional being an integral element (Antinluoma et al, 2018). Schools work systematically to find space and time to focus precisely on children's learning, aligning the work of the learning community with the day-to-day work of the school.In PLCs collaboration perceives unique content, since the school becomes a collaborative space "where ideas belong to the group and learning is promoted and valued" (Patton & Parker, 2017, p. 359). Collaboration in learning communities is about the collaborative practices and actions that teachers choose in order to collectively focus on



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children's progress, with the belief that the community can bring about significant changes, exploring not only what students are intended to achieve, but how the community can act when students are not learning (Brown, Horn & King, 2018). Collaboration and participation make sense within the learning and practice community, since actions are defined as worthy of pursuit and participation is recognized as competence (Wenger in Philpott, 2014). Participation concerns the learning process starting from individual activities and projects and gradually moving to the center of practice and experience.

Learning communities are based on learning models in which teachers are supported and develop skills that enable them to respond to the challenges that arise in the field in which they act. According to Drago-Severson (2009, as cited in Sprott, 2019), teachers move, initially, from more instrumental-type choices that focus on "doing things right", to focusing on interpersonal relationships and their social status within the group of colleagues (socializing). Within the group, a cyclical path followed (Darling-Hammond et al, 2009) gradually leads to the formation and formulation of a collective theory, stemming from the collective structured dialogue and guiding the future practices of the community (Hollins et al, 2004). Based on collective dialogue, decisions are taken by the learning community aiming to achieve quality practices that positively affect children's learning, as well as the implementation of practices and actions that contribute to the improvement of teaching and learning according to data collected (Darling-Hammond et al, 2017).

The evolution of a learning community is gradual (Nehring & Fitzsimmons, 2011). It is not an end in itself, nor is it a "technical project" or a renaming of some other existing structures (Welsh Government, 2011). It is about the process of transforming a culture that connects the practices of the community with the practice in the classroom and the common goal and, as such, it is carried out gradually and involves opportunities and challenges. Mclaughlin & Talbert (2006), recognize three stages of the evolution of learning communities. At an early stage, the changes sought, new emphases or any new tasks and demands are associated with difficult feelings of pressure or even frustration for teachers, as they are asked to identify ways of monitoring their practices and appropriate data to examine what constitutes evidence of progress. It is the stage in which teachers begin to develop research skills, formulating questions, concerns and ideas for analyzing data related to the issue of concern to the community. At an intermediate stage of learning community development, educators begin to use a circular process of implementing new practices and seeking small improvements. Despite the difficulties of connecting research with practice, and the resistance of a number of teachers to the new way of group operation, at this stage they turn to reflection, begin to cooperate with each other and make decisions on the database they are studying, thus contributing to the consolidation of common goals and gaining procedural knowledge that helps them understand how they can work together and move forward. In an advanced stage of development of the learning community, the teachers in the PLC work to investigate questions, collect and gather data on the basis of which decisions for actions are made. A sense of shared responsibility guides decisions to pursue progress, as well as systematic investigative processes, which are embedded in the operation of the school organization.

**Characteristics of PLCs – The role of leadership and participating teachers as leaders**

Schools that function as PLCs have differentiated characteristics both organizationally and functionally. They are organized on the basis of a culture of trust and professional collegiality, which seeks social interaction and the discussion of values and expected behaviors, professional synergy, cooperation and empowerment among teachers, breaking down of the professional isolation in the direction of collective action and responsibility (Nehring & Fitzsimmons, 2011). This culture 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


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cooperation between community members to focus on children'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 children'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) suggested 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 they 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. Effective leadership adopts distributed leadership that formally and strongly supports the process, aiming for as many members of the educational staff as possible to participate in the collective work of the learning community, focusing on improving the knowledge, skills and attitudes of individuals, subgroups and groups through the use of social capital of the school (Antinluoma et al, 2018). At the heart of effective actions is a focus on the mission, vision and goals that are set, elements that are an essential part of the discussion and communication on a daily basis in the school. The whole school is organized in collaborative teams, working in a repetitive cycle of reflection, planning, implementation of new ideas, analysis of results and adoption of good practices. 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).


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## The role of the PLC coordinator as a teacher leader

Teachers, as experienced instructors who have insider knowledge of the school context and of the students, are often called to lead a PLC in their schools, in order to coordinate, support and guide the PLC while seeking improvement. This crucial key-role is the PLC coordinator, who needs to find ways to make better use of the new knowledge produced and acquired in the community as signs of autonomy, facilitate the group collaborative work, but also to carefully manage the planning and utilization of time at school, taking into account that teachers often experience daily work at school as intense, frustrating and tedious (Woolway, Msimanga & Lelliott, 2019; Hollins et al, 2004). Literature shows that the teacher-leaders' role to support colleagues improved practice is hampered by obstacles related to the long-standing traditional norms, facing resistance, passivity and resentment and having difficulties in involving other teachers. Also, teacher-leaders face challenges in establishing good relationships and handling tension, as well as facing challenges to foster collaboration and integrate new activities. Literature also suggests that teacher leaders who act as PLC coordinators need a number of tools, strategies and activities to guide their complex role with in the school in order to nurture shared values and norms, promote interaction, introduce forms of collaboration and reflection, and find ways to make practice public (Turner et al, 2017; Wenger, McDermott & Snyder, 2002).

## The role of the external PLC facilitator

Evidence shows that the presence of an external facilitator is crucial for a PLC to become viable (Tan & Hairon, 2016). The role of the facilitator is complex and multifaceted, as he/she is called to act in a flexible and adoptive way within a group of professionals, in order to elicit prior knowledge, create cognitive dissonance, foster opportunities for application of actions with feedback and reflection on learning (Baviskar et al, 2009, in Ince 2017). The facilitator acts as a critical friend, whose role is shaped while interacting with each and all individuals in the group (Avgitidou, 2009), as they jointly take responsibility for collaborating in a learning environment that fosters the sense of a PLC. Occasionally, the facilitator encourages the PLC to maintain focus by restarting the topic under discussion, raises prompts and questions for clarification, summarizes major points or accomplishments, describes next steps. The facilitator, in close collaboration with the school leader, and with the PLC coordinator, creates opportunities to share methods, materials and activities and encourages teachers to implement one of the ideas shared and celebrate successes. The facilitator's role also includes establishing credibility and building rapport, by understanding the context, the lives and the authentic interest in improving students' outcomes (Hollins et al, 2004). The facilitator is responsible to foster critical reflection opportunities for teachers through structured dialogue in order for them to rethink their actions, their values and their pedagogical decisions (Huijboom et al, 2021).

Ince (2017) suggests five factors that affect the success of the facilitator's role: the ability to critically reflect; experience in the role; acuity of observation; personal motivation or commitment; and knowledge and understanding of cognitive dissonance in learning. Facilitators need to be skilled observers of learners' reactions, and they need to leverage opportunities to support learning, by engaging teachers deeply in critical reflection on own actions, understandings and challenges. Being a PLC facilitator is a challenging role, that requires constant practice and training on a variety of skills: on how and when to respond during meetings to facilitate communication and on how to better plan and understand teaching and students' learning, on how to interpret and response to teachers' attitudes and feelings, on how to better make use of new insights acquired to promote a more self-sustaining learning community, on how to carefully schedule and use time in schools to avoid frustration within an exhausting day for teachers (Hollins et al, 2004).


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## Managing technicalities

In order for a PLC to evolve and function, many things need to be in place. Structural and cultural support to nurture teachers' learning involves managing technicalities. Teachers participate in a PLC when it is aligned with the day-to-day work and with what is valued at the school, when the PLC constitutes a way to exist and evolve as a professional in the educational field, and when any pressure is perceived as a normal element of the work done in the school. Community development is positively influenced when actions and teachers perceive the practices discussed and implemented at school, as directly linked to their daily mission (Schaap & De Bruijn, 2018; Schaap et al, 2019). Therefore, creating space and time at school and restructuring existing arrangements are crucial factors for the implementation of PLCs, for participating teachers to regularly meet, talk and reflect, as time is critical for learning (Stoll et al, 2006; De Neve & Devos, 2017; Hord & Sommers, 2008; Leclerc et al, 2012; Hairon & Tan, 2017).

Meaningful and effective collaboration among teachers needs to be strategically designed in a way that is not limited to a simple description of how teachers will work collectively but to focus on how teachers will work in depth in a way that will bring about a greater impact on progress (Hargreaves & O' Connor, 2018). In this light, the partnership needs to be strategically planned, towards "collaborative professionalism", a notion introduced by Hargreaves and O' Connor (2018). PLCs need to create an appropriate knowledge-base available, in order to use evidence, consider different perspectives and make appropriate decisions (Fullan & Pinchot, 2018). Finding ways to improve the quality of work via experimentation, reflection and feedback has always been a challenge.

Towards this direction, it is important to explore and understand the way teachers' collaboration and interaction may be facilitated, technicalities be handled, and institutional framework be used in order schools to establish and consolidate a teachers' PLC. Also, finding ways to enhance key-role teachers, such as the PLC coordinators in schools, is crucial, as these persons are called to act as school-leaders who utilize and adopt competences, tools, templates and models to foster teachers' professional learning in school.

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