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UNIVERSITY *of* GLASGOW

Teacher Professional Learning Communities: An exploration of collaborative approaches to improvements in teaching and learning.

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Dissertation submitted by Christopher Derrick BEd in part fulfilment of the requirements for the degree Master of Education (Educational Leadership).

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Teacher Professional Learning Communities: An exploration of collaborative approaches to improvements in teaching and learning.

Abstract -300

Over the past twenty years, there has been a paradigm shift in approaches to professional development and to improving learning and teaching in educational settings. This shift has been towards networks of professionals with increased focus on collective accountability, and the practice of groups of staff working collaboratively in professional learning communities can be seen in schools across the world. This desk-based study explores the education policy landscape in Scotland, the prominent drivers in education and the expectation that teachers and leaders develop collaboration and engage in learning communities. It explores the literature relating to teacher professional learning communities (PLCs), reviews empirical studies and literature reviews on PLCs, and develops a conceptual framework for PLC implementation within professional settings. The insight provided by this study offers the researcher the opportunity to present implications for leadership, for policy, and for further theoretical and practical research. The research shows that PLCs can support positive improvements to teaching and learning practices and to learners' experiences and outcomes, but that certain features and conditions have an impact on their effectiveness. From a synthesis of the literature, the researcher has established three prominent themes worthy of consideration by leaders who wish to facilitate PLCs: trust, collaborative culture and teacher self-efficacy. This paper concludes that leaders who aim to develop whole school learning organisations should adopt approaches that share responsibility, distribute leadership and build capacity for continuous improvement; that build the culture, provide the resources and create the conditions in which professional learning communities can flourish; and that model values and vision, with a sharp focus on improving the experiences and outcomes of students.

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List of Abbreviations

Australian Institute for Teaching and School Leadership (AITSL)

Collective Teacher Efficacy (CTE)

Communities of Practice (CoP)

Curriculum For Excellence (CfE)

Developing the Young Workforce (DYW)

Education Resource Information Centre (ERIC)

General Teaching Council for Scotland (GTCS)

Getting it Right for Every Child (GIRFEC)

How Good is Our School (HGIOS)

International Council of Education Advisers (ICEA)

Professional Learning Community (PLC)

Regional Improvement Collaboratives (RIC)

Scottish Educational Research Association (SERA)

Teaching and Learning International Survey (TALIS)

The National Improvement Framework (NIF)

The Organisation for Economic Co-operation and Development (OECD)

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Teacher Professional Learning Communities: An exploration of collaborative approaches to improvements in teaching and learning.

Section 1 – Introduction

1.1 Background

Over the past twenty years, there has been a paradigm shift in the way in which professional development and improvements in learning and teaching have been developed in education settings. This shift has been towards networks of professionals with increased focus on collective accountability, and away from the previous perspective that professional development was the acquisition of new or enhanced knowledge in a top-down model (Vescio et al., 2008). Developing professional learning communities within and beyond educational establishments seems to offer significant scope for developing staff capacity in an effective and sustainable manner (Stoll et al., 2006).

This study is underpinned by the foundational perspective that a professional learning community (PLC) may act as a vehicle for enhancing approaches to teaching and learning. A professional learning community “has the capacity to promote and sustain the learning of all professionals in the school community with the collective purpose of enhancing pupil learning” (Bolam et al., 2005, p.145) and “offers a significant staff development and school improvement approach that contributes to whole school improvement and the school’s overall effectiveness” (Hord and Hirsh, 2008, p.25). The studies of Hargreaves and Fullan (2012) advocate for change within education to be developed through increased social capital, which they define as “the collaborative power of the group” (Hargreaves and Fullan, 2013, p.37). They promote the concept of growth and development through a collective rather than individual enterprise (Hargreaves and Fullan, 2012).

In order to adapt, innovate and improve student outcomes, “a growing body of scholars, educators and policy makers is making the case that schools should be reconceptualised as ‘learning organisations’” (OECD, 2016, p.1). A learning organisation requires consensus and

consistency of beliefs, values and norms to support and sustain a culture where staff continue to learn to learn (OECD, 2016). Sinnema and Stoll (2020) explore the conditions required for learning organisations to enable teachers to feel agency, especially at a time when curriculum reform and realisation are so prevalent (Sinnema and Stoll, 2020). They propose that effective learning organisations develop and share a vision that is centred on the learning of all students; create and support continuous learning opportunities for all staff; promote team learning and collaboration among staff; embed systems for collecting and exchanging knowledge and learning; learn with and from the external environment and larger learning system; and model and grow learning leadership (Sinnema and Stoll, 2020).

The practice of groups of teaching staff working collaboratively, as professional learning communities, learning organisations or communities of practice, can be seen in schools across the world, including in those of the Scottish education system. Underpinned by robust policy development from Scottish Government, Education Scotland and a suite of professional standards, Scottish education promotes the role of the professional as a leader of learning who continues to improve, develop and enhance their knowledge and pedagogical approaches to maintain advanced professional knowledge (GTCS, 2021). The practice of working in professional learning communities seems to align with these aims.

1.2 Background and Aims of the Study

This study explores the literature relating to teacher professional learning communities (PLCs) and develops a conceptual framework for implementation within a professional setting. A deeper understanding of the structures, benefits, and challenges of implementing PLCs will allow the researcher to effectively develop a PLC learning model (Owen, 2014) to enhance pupils' learning experiences.

The researcher is a senior leader in a Scottish independent school providing education for pupils 5-18 years old. With twelve years' experience as a senior leader, six years as a middle leader and

four years as a classroom practitioner, the researcher has spent most of their professional career leading and managing teams of staff. Leadership experiences in a range of secondary schools, in Scotland and in the Middle East, leads to this point where the researcher aims to use a research-informed approach to school improvement.

In their current role as Academic Deputy, their remit includes responsibility for enhancing teaching and learning, professional learning and leadership of learning across the secondary school. Reflecting on initial observations, dialogue with colleagues and self-evaluation practices, teaching and learning would be described as 'good' (Education Scotland, 2015), and is evidenced by strong academic attainment and achievement, and positive learner engagement.

Undertaking this role at the point where the Covid-19 pandemic had resulted in significant restrictions to collegiate practices, evidence of collaborative approaches to enhancing practice or engagement in professional learning communities was limited. This does not align with Scottish policy, research and literature which promote collaboration as key to the development of pedagogy (Education Scotland, 2019a) and provides the motivation to undertake this enquiry.

1.3 Research Questions

The overarching research question is:

What are the considerations for leaders using Professional Learning Communities to support collaborative improvement to teacher practice?

To focus the research, the specific questions to be explored through the literature were:

- What are the key features of teacher professional learning communities?
- What are the benefits and challenges of different professional learning community structures?
- What are the benefits and challenges identified by those involved in teacher professional learning communities?
- What are the implications for leadership when developing professional learning communities?

1.4 Organisation of Paper

This paper is organised into six parts with the following structure:

Introduction

This section sets out the rationale for this paper, giving the aims and background of the literature review, including the professional context of the researcher.

Overview of the literature

This section explores the literature on Professional Learning Communities (PLCs) and defines the key terms relevant to this study. This section also provides an overview of the education policy landscape in Scotland, the prominent drivers in education and the expectation that Scottish teachers and leaders develop collaboration and engage in learning communities. Emergent themes from policy, including key messages regarding leadership, influence the collaborative approaches used in schools.

Methodology

The methodology sets out and justifies the literature review approach taken in this study. The specific process used to refine the search of literature is detailed, as well as the ethical considerations.

Findings from the literature

Machi and McEvoy (2016) define a literature review as:

“A written document that develops a case to establish a thesis. This case is based on a comprehensive understanding of the current knowledge of the topic. A literature review synthesizes current knowledge pertaining to the research question. This synthesis is the foundation that, through the use of logical argumentation, allows the researcher to build a convincing thesis case” (Machi and McEvoy, 2016, p.17).

This section presents the 'data' gathered, mapped and synthesised through the use of a reading framework (Creswell and Creswell, 2017), allowing the researcher to explore studies that are relevant to the overarching research question.

Discussion

This section draws on the literature review and findings, and discusses perspectives, conclusions and connections. It considers the themes identified in the research and reduces the wealth of data to propose key implications of the study (Leshem and Trafford, 2007). Limitations of the approach and next steps will be considered at this stage (Leshem and Trafford, 2007).

Conclusion

The reverse triangle method of literature review should narrow the conclusions to specifically address the research question (Lindemann, 2017). The conclusion will summarise the overall findings and the considerations for leaders using Professional Learning Communities to support collaborative improvement to teacher practice.

Section 2 – Overview of the Literature

2.1 Scottish Education Policy

The most prominent theme in Scottish education policy is the importance of improving educational outcomes for learners, with many illustrative diagrams and models explicitly having learners at the centre (GIRFEC, National Model of Professional Learning, Empowered System Resource, Developing the Young Workforce (DYW), The National Improvement Framework (NIF), A Curriculum for Excellence (CfE), etc.).

There are, however, divergent perspectives of *how* to implement an education system with young people at the centre: enhancing the knowledge, skills and values of professionals; making improvements in teaching and learning; using rigorous systems of self-evaluation; developing an empowered system; or creating networks, collaboratives and learning communities.

The table below outlines the main policies in Scottish education, with seven of these highlighted by Education Scotland as being of central importance (*). Of the policies in this table, those that are directly related to professional learning communities are in bold font. The researcher has categorised these policies under four subheadings and will explore the relevance of each to professional learning communities:

- Professional Drivers
- Curriculum Drivers
- Excellence and Equity Drivers
- Improvement and Leadership Drivers

Policies and Policy Drivers				
Professional Drivers	National Model of Professional Learning (2023)	GTCS Professional Standards (2021)	RICS interim review 2019	
Curriculum Drivers	DYW (2014)*	Curriculum for Excellence (2008)*	Digital Learning and Teaching Strategy for Scotland*	Standard for Early Learning and Childcare providers: Principles and Practice*
	Learning for Sustainability*			
Excellence and Equity Drivers	GIRFEC (2008)*	Developing a positive whole school ethos and culture: relationships, learning and behaviour (2017)*	National Improvement Framework	Delivering Excellence and Equity
	Scottish Attainment Challenge	Pupil Equity Funding		
Improvement and Leadership Drivers	HIGIOS 4 (2015)	Empowering Schools – 2018	The Empowered System Resources (2019)	Improving Schools in Scotland, an OECD Review (2015)

Figure 1

Education Scotland Policy Drivers for Scottish Education (2023b)

2.1.1 Professional Drivers

As the governing body that promotes and drives improvement in Scottish education, Education Scotland endorses the practice of PLCs through a consistent narrative in their documents of collaboration, community and teacher agency to develop teacher practice (How Good is Our School 4, 2015; The Empowered System Resource, 2019; National Model for Professional Learning, 2023). Education Scotland (2019b) state that teachers “benefit from engaging with

networks and learning communities who are developing professional practice together throughout their career” (Education Scotland, 2019b, p.1).

The National Model of Professional Learning (Education Scotland, 2023a) leans heavily on leading authors in this area. For example, the concept of professional capital, as explored by Hargreaves and Fullan (2012), is evident in the Scottish model. They present three components of professional capital: “human capital (the talent of individuals); social capital (the collaborative power of the group); and decisional capital (the wisdom and expertise to make sound judgements about learners that are cultivated over many years)” (Hargreaves and Fullan, 2013, p.37).

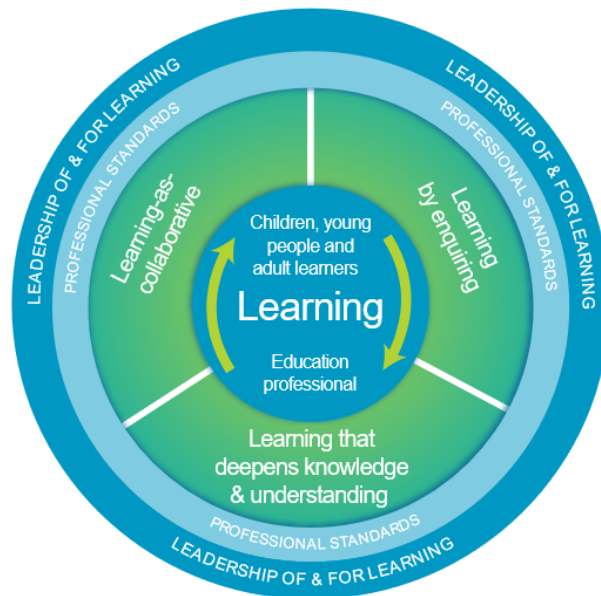


Figure 2

The National Model of Professional Learning (Education Scotland, 2023a)

Within this aspirational model of professional learning, ‘Learning-as-collaborative’ is one of three key features of effective learning for teachers. Sharing professional learning, learning with and from others, conversations about learning, and being part of an active learning community, are key principles of collaboration in this model.

The General Teaching Council for Scotland (GTCS) set out the knowledge, skills and values that teachers and leaders must demonstrate in their practice through their revised professional

standards (GTCS, 2021a). In these standards, they promote learning with and from others (GTCS, 2021a). The GTCS provides guidance on how teachers can work collaboratively to develop their skills and knowledge and they promote “partnership, leadership, enquiry and professional learning” (GTCS website, 2023).

The professional standards also create a shared language for teaching professionals, and we can deduce the significance of collaborative professional development from the language used. In the Standards for Career Long Professional Learning (GTCS, 2021c) the term *professional* is understandably used regularly (138 times), but it is of note that *collaborative* (19), *enquiry* (12), *community* (17) and *teacher professional learning* (25) are also used frequently.

2.1.2 Curriculum Drivers

Curriculum for Excellence (CfE, 2008) was a curricular reform that was considered to be “one of the most ambitious programmes of educational change ever undertaken in Scotland” (Scottish Government, 2008, p. 8). Since its inception, however, it has faced significant challenges turning policy into practice and criticism of shifting narratives: “A shifting policy discourse (excellence, equity, collaboration, empowerment, attainment, leadership) and the persistence of tensions resulting from accountability mechanisms have made the enactment of CfE challenging for many teachers” (Humes and Priestley, 2021, p.177). International examination has also highlighted the lack of articulation between the inspirational and widely supported philosophy of the Broad General Education and the Senior Phase (OECD, 2021a).

Although tensions existed from the outset between the philosophy and aims of CfE and the practicalities of enactment, most teachers did welcome increased emphasis on and opportunities to work collaboratively to enhance pedagogy. According to Priestley and Minty (2012), “peer observation and collaborative working were considered to be strong drivers” (Priestley and Minty, 2012, p.6). Over the past decade, the Scottish curriculum and education system have been subject to ongoing scrutiny (Hargreaves et al., 2015; Humes and Priestley, 2021; OECD, 2021a; The Scottish Government, 2022), with the continuing emphasis on professional networks being

seen as a positive feature of the system and one aspect that should continue to be prominent as reform continues (Scottish Government, 2020).

2.1.3 Excellence and Equity Drivers

Scottish education policy is significantly influenced by political factors and education has had a high profile in the policy agenda of recent years (Humes, 2020). Themes of particular prominence in Scottish policy are those of excellence and equity, with the National Improvement Framework asserting these goals as central to the vision for Scottish education (The Scottish Government, 2022).

The National Improvement Framework not only promotes the common moral imperative of excellence and equity for all, but it also provides a framework to support collaboration between schools, local authorities and national agencies that may drive this agenda towards improvement (The Scottish Government, 2022).

2.1.4 Improvement and Leadership Drivers

The role of leadership in facilitating individual and collective teacher agency is a common theme in local and international education policy (OECD, 2019; Education Scotland, 2023a). The aim is for leadership that encourages and nurtures empowered and collaborative systems (The Scottish Government, 2023a) where professional learning communities work to meet the needs of learners: “Effective school leaders support cultures that welcome and foster teacher agency, supporting and enabling collaborative professionalism, including teacher-led professional learning” (Education Scotland, 2019c, p.1).

While the professional standards for teachers challenge practitioners to individually and collaboratively develop their professional practice, the standards for middle and senior leaders promote teacher leadership through collegiate working that builds leadership capacity in others (GTCS, 2021a; GTCS, 2021b; GTCS, 2021c). The connection between leadership and

empowerment can also be seen in the emphasis on professional learning opportunities that explicitly nurture these aspects: “Education Scotland will build on its existing professional learning and leadership suite of programmes supporting empowerment and agency” (Scottish Government, 2023b, p.6).

2.1.5 International Influence on Scottish Policy

The OECD has an influential role in shaping the Scottish policy landscape and their reports and documents, such as ‘Preparing teachers and developing school leaders for the 21st century’, which highlight key messages from the most successful education systems across the world, with themes relating to professional learning communities being prominent. For example, the OECD Teachers’ Professional Learning Study (2020) concludes, from research, that professional learning for teachers is most effective when occurring in school, when working collaboratively with peers and when facilitated in a sustainable manner. Joint planning, professional development and leadership are highlighted as important tools for implementing the practices of professional learning communities (Schleicher, 2012; Schleicher, 2015).

In guiding school leaders and organisations, the OECD considers the practices of team learning, collaborative learning, and developing professional learning networks as ways of engendering cooperation, trust and respect in the community (OECD, 2016). Achieving excellence in our classrooms can only be achieved if we have reflective practitioners who see professional development as continuous, and we lead and invest in an empowered system (Schleicher, 2016).

Although considered one of the most effective ways to improve teacher practice, the Teaching and Learning International Survey (TALIS) (OECD, 2019) detailed that less than 50 percent of teachers surveyed in OECD countries regularly participated in professional development networks and less than 50 percent engaged in formal peer observation or coaching approaches to improvements. This is important for school leaders to reflect on as they plan professional learning and develop professional learning communities. The OECD have since noted that “Among education systems participating in the Special Survey, the three most common types of support for school teachers that governments reported planning to offer in 2021 focused on

providing and promoting professional learning, including through peer collaboration” (OECD, 2021b, p.82).

The International Council of Educational Advisers (ICEA) performs a key role in supporting the Scottish Government’s response to international policy and practice. Some of the recommendations from the ICEA Report 2020, which sought to respond to advice from the OECD and Hargreaves et al. (2015), support the use of professional networking, collaboration and PLCs. These recommendations are presented in the table below:

ICEA Findings and Recommendations	
	Many professional networks enable sharing of examples of successful practice.
	Collective agency and efficacy within and across networks are key ingredients for building inclusive, responsive, agile and collaborative systems that can continually adapt and improve while advancing core values and purposes.
	A commitment to system change should be driven by collaborative professional relationships and underpinned by peer challenge rather than external demands.
	Effective leadership approaches emphasise distributed responsibility and engagement, professional judgement and agency, robust collaborative professionalism, and local energy and ownership.

Figure 3

International Council of Educational Advisers’ Report, Scottish Government, 2020

These recommendations are echoed in recent Scottish policy and guidance, such as the advice to the Scottish Government on education reform from Professor Kenneth Muir in ‘Putting Learners at the Centre: Towards a Future Vision for Scottish Education’ (Muir, 2022). Among the principles proposed as essential for Scottish education to become a successful, coherent and self-improving system is “an enhanced focus on ensuring high quality learning and teaching and increased collaboration among practitioners, based on the adoption of a continuous learning mindset” (Muir, 2022, p.15).

2.2 Professional Learning Communities

2.2.1 Definitions

A professional learning community (PLC) can have many different forms and interpretations, depending on its function as either a network, a process, a space, or an approach (Nguyen et al., 2021) and so a definition of the term is essential to this literature review. Although it has been a number of years since the initial development of PLCs, there remains significant complexity associated with the term, partly due to the varying definitions of the three words within the title (Hairon et al., 2017). This makes the collective use of this term more complex and open to different interpretations and practical applications (Hairon et al., 2017). A further complexity of this term relates to the form and context of a PLC, as it can refer to a team of staff across organisations, an entire organisation itself or a small team of staff (Wang, 2015).

A prominent feature of PLC definitions is that the purpose and goal is to bring staff together, to learn, to grow and to improve for the benefit of their students (Hord and Hirsh, 2008). Huffman and Hipp (2010), reflecting on the transformational impact that PLCs can have on education, define a PLC as a collective that seeks to “find answers through enquiry and act on their learning to improve student learning” (Huffman and Hipp, 2003, p.4). DuFour, a founding author on PLCs, describes “an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve” (DuFour et al., 2010, p.11). An essential feature of the cycle is reflection, and a PLC can be defined as a community of participants engaged in reflective learning experiences that focus on new approaches to pedagogy (Irby, 2020).

This concept of a PLC having an ongoing or cyclical approach is reflected in many literature reviews (DuFour, 2004; Teague and Anfara, 2012; Meeuwen et al., 2020; McPherson and Asghar, 2023). Sigurdardóttir (2010) argues that “a professional learning community consists of a group of professionals, sharing common goals and purposes, constantly gaining new knowledge through interaction with one another, and aiming to improve practices” (Sigurdardóttir, 2010, p.397). This cycle involves investigating and developing knowledge through daily practice, trying

out new teaching approaches, interacting with colleagues and collaborating to find new and better approaches.

The definition adopted for this study is that of Stoll et al. (2006), as their definition draws on the work of prominent authors and brings together the key features of other definitions: “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” (Stoll et al., 2006, p. 223).

As a defining feature of PLCs, a prominent term in this field that also requires definition is that of ‘collaboration’. Collaboration can be defined within education as “the cooperative actions teachers undertake for job-related purposes (their actual doing things together)” (Kelchtermans 2006, cited in Vangrieken et al., 2015, p.18). It is important to recognise the subtle distinction between collaboration and collegiality: “The latter was used to describe the quality of the relationships ... includes a positive value, referring to good relationships among colleagues, and is part of the organisational culture” (Vangrieken et al., 2015, p.18). Collaboration is often considered as more than working together or joint working. It is considered “an interactive process that engages two or more partners who work together to achieve value and outcomes” (Lemon and Salmons, 2020, p.2). The term collaboration is often loaded with inference of positivity from the perspective that it takes a “positive form of working in association with others for some form of mutual benefit” (Huxham, 1996, p.1).

2.2.2 Features

While studies into PLCs and their perceived effectiveness often start with definitions of the form, nature and purpose of a PLC, these definitions naturally progress onto explore the features of successful PLCs. DuFour (2004) and DuFour and DuFour (2016) propose six components of a PLC that can be considered under the banner of ‘3 Big Ideas’ that frame their core principles (DuFour, 2004).

Big Idea 1 - Ensuring Students Learn

The first component is 'Student Learning and Experiences' (DuFour et al., 2010). PLCs should focus on the learning experiences of all students, and this must remain the central focus throughout the process. Consideration should be given to what is taught but also how it is taught, how learners are engaged and how all students are supported to learn, to develop and to grow. To develop as a learning organisation, the central focus must always be to improve outcomes for learners, with the adults continually learning and reflecting on how to do this better. Component two is 'Continuous Improvement' (DuFour et al., 2010), where the PLC must drive professional learning through reflective dialogue, interrogation of the curriculum and evaluation of the pedagogical approaches employed.

Big Idea 2 – A Culture of Collaboration

This establishes a focus on a collective purpose, reflecting on *Big Idea 1*, as it is about learning for all, by all. Having a shared vision and focus helps to frame this component. Component three is 'Collaborative Teams' (DuFour et al., 2010), where a culture of collaboration requires structures and resources from supportive leaders. Teams of staff must work together to share practice and share responsibility, working together and not in isolation. This may require a process which develops common expectations, norms, goals, agreement on roles and responsibilities which will all help establish the relationships required for successful PLCs. Component four is 'Collective Inquiry' (DuFour et al., 2010), where the collective effort of the team, both operationally and cognitively, are combined to apply new knowledge or skills to improve their teaching and, in turn, the learning of students.

Big Idea 3 – A Focus on Results

Component five is 'Action Orientation', which is described as "A sequential, non-linear and cyclical process" (DuFour, et al., 2010, p.2) where research alone cannot improve outcomes for learners. Educators must put research into practice and measure progress and recognise that a

cyclical focus of improvement maintains a focus on always striving to be better. The final component is 'A Focus on Results Orientation'. This component highlights the importance of monitoring and tracking, supporting evaluation of activities that improve pupil outcomes and identifying those that do not have positive impact (DuFour, et al., 2010).

Hord and Sommers (2008) have reviewed and conceptualised PLC literature to make it accessible, and detail five similar features of effective PLCs for educators (Hord and Sommers, 2008). The first of these is shared beliefs, values and vision, which should centre on an understanding that the goal is to improve the learning for pupils by improving the approaches of the staff (Zhang et al., 2022). Secondly, there is a need for collective, shared and supportive leadership, where all parties, regardless of hierarchy, have shared responsibility for the decision making and improvement process (Voelkel, 2022). Thirdly, collective efficacy, learning and application of improved pedagogical approaches that focus on the 'what' to improve must be directed by the members of the community (Ninkovic et al., 2022). In some cases, this will be a project-based enquiry approach to professional development (Nguyen et al., 2021). Fourthly, supportive conditions are essential, where the behaviours of the community promote sound interpersonal qualities including care and respect. Trust and honesty characterise the behaviours that promote a supportive environment, with leaders, organisers and staff providing the necessary environment for this by supporting the 'how'. PLCs also need time to engage in the process, a place (or virtual place) to collaborate, and the resources and policies that support improvement. The final component proposed is that of shared practice and an effective feedback cycle (Hord and Sommers, 2008). Developing and assimilating new ideas as a team is important, but there is also a need to have the relational trust for constructive feedback to occur throughout the shared process (Yoo and Jang, 2022).

Synthesising the work of a various authors, Fred et al. (2020) present a theoretical framework of eleven features of PLCs, sub divided into three clusters. The first cluster is of individual and collective learning characteristics. The behavioural characteristics in this cluster consist of collaboration, reflection, giving and receiving feedback, and experimenting. The group dynamics cluster consists of mutual trust and respect, collegial support and social cohesion. The professional orientation cluster consists of shared vision, shared responsibility, shared focus on

student learning, and shared focus on continuous learning (Fred et al., 2020). The characteristics are behavioural and attitudinal and, although it is argued that they exemplify the success of a PLC, they can be challenging to measure (Fred et al., 2020).

2.2.3 Structures of PLCs

The structure or form a professional learning community takes is determined by the people who construct it. Nguyen et al. (2021) explore PLCs in the geographical south and categorise them as contrived, teacher-initiated or project-based.

Contrived approaches refer to collaborations often initiated by a leader in educational settings. This structure often comes in the form of a mandate regarding an area that leadership has deemed important to improve (Nguyen et al., 2021). Where PLCs are externally facilitated or driven by leadership, this can lead to resistance, particularly at the initiation, implementation and realisation stages (Harris and Jones, 2010; Wang, 2015; Fullan, 2020). One of the most common reasons for resistance to PLCs can be the pressure of time (Elbousty and Bratt, 2010). It is the role of the leader to facilitate this time and structure the conditions that will support the empowerment of others (Hairon, et al., 2017).

Teacher-initiated approaches are more organic and come from a small group of staff who have a shared interest in improving a particular area of practice. Through distributed leadership, teachers can initiate PLCs which can operate within, between and across schools, to develop system level improvements (Harris and Jones, 2010; Nguyen et al., 2021). Distributed leadership, although difficult to define, is described by Spillane et al. (2007) and Tian et al. (2016) as a movement away from a single person responsibility, such as an educational leader, to a process where multiple staff are mobilised, trusted with ownership, involved in decision making and share knowledge as agents of change. This can support the development of organisational structures that facilitate teacher forums, develop professional dialogue and contribute to de-privatising classroom practice (Spillane et al., 2007). Teacher-initiated PLCs promote an 'interdependency' on the network rather than an 'independency', and the mutual dependency is what develops the capacity of the network to improve (Harris and Jones, 2010). Capacity building

can be seen as a collective endeavour, where entire schools, districts or systems can increase their capacity through new ways of collective working (Fullan, et al., 2005).

Project-based PLCs are often focused through a strategy document, such as an improvement plan, or as part of a professional development or action research project. Harris and Jones (2010) highlight that secondary subjects can face barriers with this approach as the development priorities in teaching and learning could vary between departments within an institution. This could undermine one of the key components of PLCs, which is collective, positive influence on each other's development. Virtual communities have proven a valuable way of overcoming some of the barriers, by getting educators from different institutions with similar improvement priorities to work collaboratively on professional development activities and action research (Nguyen et al., 2021).

Section 3 – Methodology

The literature review method was chosen for this study because it provides a structured approach to creating a literature base.

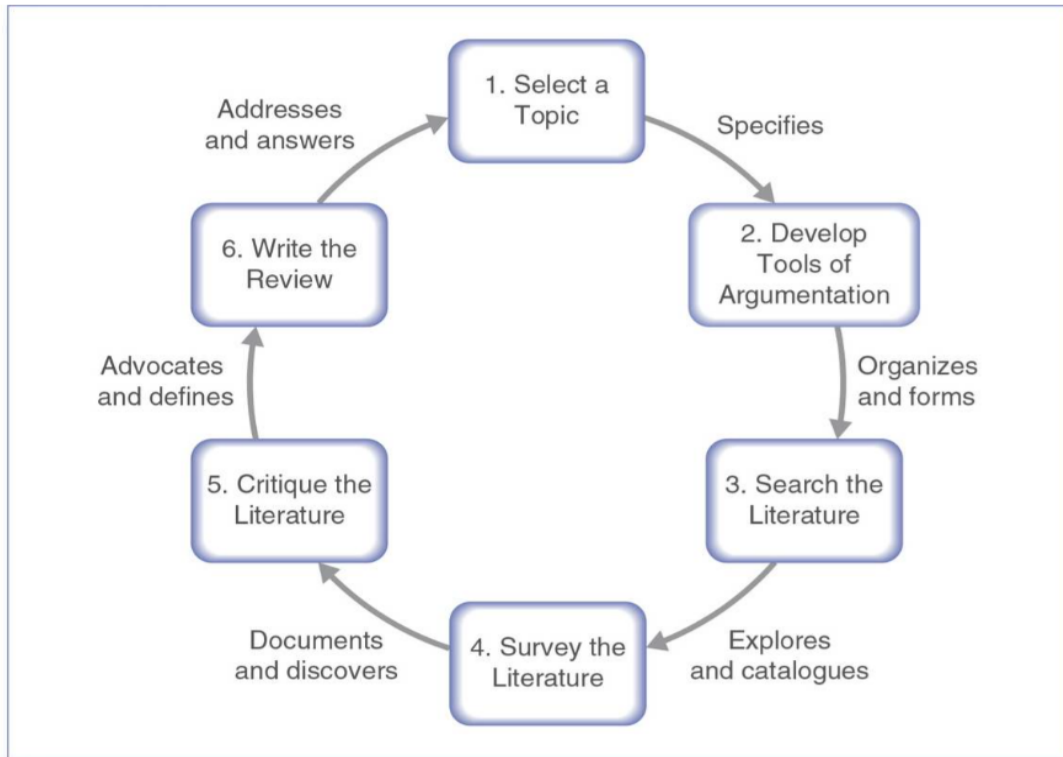


Figure 4

The Literature Review Model (Machi and McEvoy, 2016)

Being guided by the work of Creswell and Creswell (2017), Cohen et al. (2018), and Machi and McEvoy (2016), the researcher used a comprehensive database, selected key terms and used Boolean operators to refine the search and select articles for analysis. This allowed the researcher to draw a critical summary of the key themes and use the data to explore the research topic and questions.

The researcher employed the search functions of EBSCOhost. This is one of the most reputable and robust systems the researcher had access to and supported the integrity and scale of the search. This system includes Education Resources Information Centre (ERIC), one of the most

broad and appropriate research databases for educational literature reviews (Creswell and Creswell, 2017; Cohen et al., 2018). SCOPUS and Google Scholar were also used as cross-checking databases as accessible and user-friendly resources.

Cohen et al. (2018) rationalise the key features of a literature review, including the importance of:

“defining key terms, constructs and concepts, and reporting key methodologies used in other research into the topic. The literature review also sets out what the key issues are in the field to be explored, and why they are, in fact, key issues, and it identifies gaps that need to be plugged in the field” (Cohen et al., 2018, p.181).

Creswell and Creswell (2017) also highlight the significance of key terms and emphasise the establishment of terms as an important stage of a literature review. At the outset of the literature review, the following definition of a PLC was adopted: “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” (Stoll et al., 2006, p. 223). It was recognised, however, that further engagement with the literature could lead to the consideration of other definitions.

3.1 Literature Review Protocol

As the researcher broadly prepared for a more structured search, it was a conscious decision not to discount any literature that referred to models of professional learning communities using alternative terms, such as ‘communities of practice’, ‘professional networks’ or ‘teaching research groups’.

The search was initially set to include the key terms: “Education” AND “Professional Learning Community” AND “Collaboration” OR “Professional Learning” OR “Community of Practice” OR “Professional Enquiry” or “Collaborative Culture” OR “Learning and Teaching Networks” OR “Professional Networks”. The filters were set to identify records with these terms located within the text, the title, the abstract or the key words.

Key Terms for Literature Search
Education
Professional Learning Community
Collaboration
Professional Learning
Community of Practice
Professional Enquiry
Collaborative Culture
Learning and Teaching Networks
Professional Networks

Figure 5

Key Terms for Literature Search

To enhance the validity of the research findings, the search was limited to peer-reviewed journal articles. To give the search relevance and to make it current, the timeframe was set from 2010-2023. The functionality in EBSCOhost facilitated a refinement of results by adding additional criteria such as restricting the search to articles in English and articles published in countries with developed education systems. This led to an initial return of 7887 results.

Using the relevance function in the online university library, the researcher was able to select relevant literature. Limiting the search to the last three years allowed for a refined search, which returned 2022 results.

Professional learning communities can span across various phases of learning, with lessons to be learned by professionals in different settings and context. For two reasons, the criteria were set to discount articles which focused solely on early years, further education or higher education. Firstly, relating to the national context, the GTCS professional standards are relevant to only primary and secondary practitioners. Both phases share expectations, professional networks and collaborative development opportunities, such as those facilitated by Education Scotland. Secondly, the researcher's context is a school serving pupils aged five to eighteen years old. Although the researcher's professional responsibilities are to lead secondary staff and pupils, being a member of the executive leadership team of both primary and secondary teachers includes a professional responsibility to consider research from both sectors.

Continuing with a scanning approach to identify key words and titles and then to read abstracts and conclusions, the researcher was able to identify fifty-four articles to read in more detail, as they were of direct relevance to the topic of enquiry. Some of these articles sat out with the original search parameters as they were identified through naturally linking articles together and a curiosity to investigate some of the citations or research discussed. As the research developed, repeating the search but using the key words from the synthesised themes allowed for further relevant literature to be identified. A reading framework was created to structure and chart the main discussion points, findings and research methodologies of the final articles.

3.2 Conceptualising a Framework

This literature review allowed data, knowledge and understanding to be obtained for the purposes of responding to the research questions and developing a framework for implementation. The benefits of conceptualising a framework in this way are detailed by Leshem and Trafford (2007):

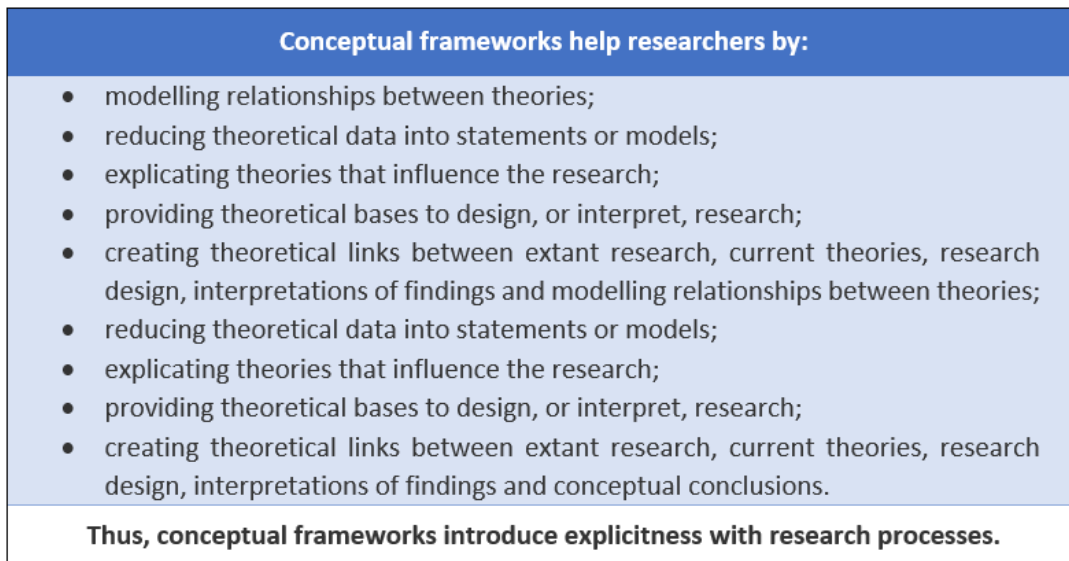


Figure 6

The benefits of developing a conceptual framework (Leshem and Trafford, 2007).

3.3 Research Questions

The overarching research question is:

What are the considerations for leaders using Professional Learning Communities to support collaborative improvement to teacher practice?

To focus the research, the specific questions to be explored through the literature were:

- What are the key features of teacher professional learning communities?
- What are the benefits and challenges of different professional learning community structures?
- What are the benefits and challenges identified by those involved in teacher professional learning communities?
- What are the implications for leadership when developing teacher professional learning communities?

3.4 Ethical Considerations

This dissertation has been undertaken in a manner to ensure that it takes an ethical approach which demonstrates “rigour and quality in the design, conduct, analysis and reporting of the research” (Morrison, 1996, cited in Cohen et al., 2018, p.112).

The Scottish Educational Research Association (SERA) produces guidelines to assist an ethical approach to research (SERA, 2005). Educational research occurs in complex contexts, and the researcher must exercise professional judgement and make decisions in an ethical way (SERA, 2005). As “ethical issues are not a once and for all matter which can be decided before the research commences” (Cohen et al., 2018, p.111), ethical considerations must be evident throughout this study. Much of this research is theoretical, with the aim of successfully applying the findings in the researcher’s context. A literature review “establishes and justifies the theoretical and conceptual frameworks of the research and the research design” (Cohen et al., 2018, p.162). Although a non-empirical approach requires the researcher to critically review a range of literature, this must be from an objective view absent of bias.

Bell (2010) notes the importance of being actively self-critical and conscious of the necessity to be “wise and vigilant, critical of our interpretation of the data, [and] regularly question our practice” (Bell, 2010, p.170), while Cohen et al. (2018) warn against “thoughtlessness, oversight or taking matters for granted” (Cohen et al., 2018, p.112). Reflecting on such advice, and the potential for professional or personal bias, the researcher has considered the motivation to conduct this research. As the researcher progresses, deliberate and explicit reflection will be important to ensure established beliefs and dispositions do not preclude the consideration of all influencing factors. One of the challenges for the researcher will be to consider local context but not contrive professional goals by predetermining the findings or conclusions of this research.

As part of the ethical considerations of this study, it is important to recognise the researcher’s position as a leader in the school that the conceptual framework is being prepared for. Due to the literature-based approach adopted, data collection is desk based and there is less likely to be bias through interactions or relationships, due to the absence of participants. Nevertheless, the researcher’s experience and assumptions have laid the foundations of this study and established the research questions which, unquestionably, must involve some potential for bias.

Analysing the literature, the researcher must consider the ethical issues surrounding leadership. The researcher has responsibility for leading staff development and improvements in teaching and learning, and it will be important to be aware of the influence of the leader in this context. If, as an example, this process leads to PLCs being established through contrived collegiality (Wang, 2015), this may lead to ethical concerns, such as apparent impact being falsely reported through positive feedback from colleagues due to well-intentioned loyalty.

At each stage of the enquiry process, validity and reliability will be important and the researcher must carefully consider how valid and reliable the data, findings and conclusions are before making connections with the research questions (Winter, 2000, cited in Cohen et al., 2018), as caution must be taken when summarising findings and making links in the literature (Cohen et al., 2018).

Reliability can be considered as “an overarching term for dependability, consistency and replicability” (Cohen et al., 2018, p.268) and so the approach taken at the literature review stage

will be replicable. The researcher will also be conscious of potential subjectivity when scanning and selecting articles as this can make replicability less robust.

A primary limitation of this research arises due to the commonality of the term PLCs in educational literature. Although a wealth of material can provide a rich research base, it can also present the challenge of managing an overwhelming amount of material, as was the experience of the researcher when broadly researching this area and considering the research questions.

3.5 Philosophical Standpoint

In preparing for research, Saunders et al. (2007) propose that researchers must explore their philosophical standpoint before progressing through the layers of a study, which they refer to as the 'Research Onion' (Saunders et al., 2007). It is important for a researcher to examine and establish their beliefs and their world view, in order to guide their approach (Guba and Lincoln, 1994): "learn to examine your own beliefs with the same scrutiny as you would apply to the beliefs of others" (Saunders et al., 2007, p.22).

The researcher's standpoint is founded on pragmatist and interpretivist/constructivist paradigms (Creswell, 2017). The pragmatist seeks to utilise the best approaches of other studies to gain from this knowledge. Through analysis of multiple methodologies, the researcher aims to find connections within the research that will respond to the research questions.

From an interpretivist perspective, the study aims to learn from the experiences of others, reviewing the literature to consider other contexts, research approaches, lessons learned and successes. While context is important to each study, it is important to be ready to adapt and change, and to recognise that one study's definition or construct of success does not necessarily mean success in another setting. The central enterprise of the interpretivist perspective is to synthesise an understanding of the perspectives and experiences of others and their context/environment (Guba and Lincoln, 1989).

Guba and Lincoln (1989) also propose that a paradigm comprises four elements: ontology, epistemology, axiology and methodology, the latter of which has already been explored.

Ontology

Ontology is defined as the part of philosophy that studies what it means to exist. The researcher's beliefs are that this study is founded in a social environment where beliefs are established through experiences, aligning with Guskey's (2002) findings that educational change occurs primarily through experiential learning.

In order to implement PLCs within the researcher's context, it is important to conceptualise a foundational understanding. This standpoint has helped develop the research problem and questions outlined. The study does not propose to find the defining truth of how professional learning communities are established, but to generate an understanding of what factors might be significant to their success in the researcher's context.

Epistemology

The researcher aims to understand the knowledge of others, specifically experts in the field of PLCs. This rationalist epistemology can be contrasted with empirical epistemology, by understanding that experience is important. The interpretivist paradigm cannot separate the researcher from the research, as the researcher aims to use the processes of the study to conceptualise a framework that is founded in balanced and objective study conclusions. In understanding the viewpoints of others, humans construct their own meanings. Education is situated in social environments and therefore all data/observations require context. Due to the complex social phenomenon that occurs in education, any meaning attributed at any one time can evolve or change (Cohen et al., 2018).

Axiology

The quality of the researcher's approaches to the literature review will support an interpretivist approach. Valuing the opinions and perspectives of those cited in the research, to understand their context and experiences, is vital. Synthesising the knowledge, perspectives and experiences of others will allow the researcher to establish a 'new reality' that, in a sense, will be co-created and can be shared (Lincoln and Guba, 2013).

Section 4 – Findings

This section unpacks, discusses and presents the main findings of the literature review on Professional Learning Communities. These findings are organised into the themes of trust, collaborative culture and teacher self-efficacy, and the implications for leadership are explored under each theme.

Trust

Understanding the successful features of PLCs includes an understanding of the psychological attributes of participants, such as belief, commitment and trust (Zheng et al., 2019; Liu and Yin, 2023, referencing the research of Hallinger et al., 2014), and the role of trust is prominent in the literature relating to PLCs. Bowe and Gore (2017) undertook a literature review of PLCs and instructional rounds to propose a 'reassembled' approach known as 'Quality Teaching Rounds' to schools in New South Wales, Australia. They state that a productive PLC environment relies on professional dialogue that encourages positive and sustained relationships, which must be underpinned by mutual trust. As trust, respect and support are characteristics of mature PLCs, they propose that using collaborative, empowering, and trusting approaches to professional development can break down a culture of 'privatism' which can exist in some educational settings. Opportunities for reflective peer dialogue should be provided in order to "build trust and counter the well documented reluctance of teachers to open up classrooms for peer observation" (Bowe and Gore, 2017, p.357).

Openness is considered by Kelly (2013), who used interviews and questionnaires with 11 primary teachers in three PLCs in Canada. Kelly (2013) found that honesty, active listening and responsiveness encouraged a collective approach to problem solving that improved PLC productivity and impact (Kelly, 2013). The importance of relational trust is highlighted by Meeuwen et al. (2020), who state that "higher levels of performance regarding student achievement and teacher collaboration" are found when relational trust is strong (Meeuwen et al., 2020, p.411). Proposing a move away from a top down, externally facilitated model of professional development, Hofman and Dijkstra (2010) explore how trust can be exemplified,

how teacher self-efficacy and job satisfaction can be improved, and the importance of shared goals, objectives, values, and beliefs (Hofman and Dijkstra, 2010). Teacher self-efficacy, which is one's belief about their level of competence, can not only motivate students and improve outcomes but also drive teacher professional development and school improvement (Tschannen-Moran and Hoy, 2001). Hofman and Dijkstra (2010) consider the structural, conditional and cultural influences on PLCs, and conclude that cultural elements are of greatest significance, particularly "the motivation of teachers to participate" and "the relationship between teachers" (Hofman and Dijkstra, 2010, p.1033). In determining the successfulness of each network in their study, Hofman and Dijkstra (2010) considered success to be indicated by improvements to teacher knowledge, teacher self-efficacy, professional motivation, classroom instruction and, ultimately, student outcomes (Hofman and Dijkstra, 2010).

Using a questionnaire of 363 teachers in Serbia, Ninkovic et al. (2022) propose a direct correlation between high performance of schools and collaborative relationships between teachers who feel high levels of trust. They explore the impact that teachers' trust in each other has on collective teacher efficacy and explore the concept of vulnerability. They reference the work of Hoy and Tschannen-Moran (2003) and conceptualise trust as "an individual's or group's willingness to be vulnerable to another party based on the confidence that the latter party is benevolent, reliable, competent, honest, and open" (Ninkovic et al., 2022, p.2). They highlight the importance of vulnerability if participants are to take risks in psychologically safe environments, leading to behaviours of taking initiative, seeking feedback, and discussing errors and improvements (Ninkovic et al., 2022). Where there is a sense of being judged, this can lead to participants' fear that they are not in a safe space in which to experiment, which can perpetuate insecurities (McPherson and Asghar, 2023).

The aforementioned study by Kelly (2013), also explores the emergence of vulnerability: where "one makes oneself vulnerable, there is a much greater opportunity of reframing knowledge" (Kelly, 2013, p.863). This study notes that vulnerability helped to nurture the interdependency and collective relationships of the participants involved, reframing vulnerability as a positive influence and challenging the negative connotations the term normally perpetuates (Kelly, 2013). Hou et al. (2023) also consider vulnerability in their study of four female novice teachers in PLCs

in China, using semi-structured interviews. They explore negative forms of vulnerability, where novice teachers are perceived as having lower status and less power than more experienced teachers. This imbalance is unlikely to engender a culture of trust and is not the same positive form of mutual vulnerability presented by Kelly (2013) and Ninkovic et al. (2022). Hou et al. (2023) also propose that PLCs can help to address the vulnerability of novice teachers, by providing professional support and improving their confidence in their own ability to teach effectively (Hou et al., 2023).

The relationship between trust and conflict is also explored in the literature. Zhang et al. (2023) used a questionnaire to research the impact of PLCs on 982 teachers in Shanghai, China. Trust is an important component of the culture in a school and Zhang et al. (2023) consider this to be an important feature if truly meaningful dialogue, in-depth interactions and necessary conflicts are to happen in safe environments. Indeed, they recognise that where fully harmonious environments are promoted, these may not lead to innovative and challenging progressive dialogue between colleagues. Trust allows such conversations to happen and for inevitable conflict to be resolved. Where leaders nurture trust, there is less fear of, or resistance to, conflict, as the culture is one which welcomes multiple views and perspectives: “it is important for teachers to realise that conflict is unavoidable in collective activities, which might facilitate in-depth interactions and thus breakthroughs and innovations” (Zhang et al., 2023, p.30, citing Riedlinger, 2006). Leaders can actively encourage diverse views and create cultures where conflict is seen as a healthy and necessary aspect of authentic collaboration (Zhang et al., 2023).

Hou et al. (2023) explore the types of conflict that can arise in professional learning communities. Task conflict relates to the opposing views on the way tasks should be undertaken. Relationship conflict occurs when personalities clash and elicits more of an emotional response. Goal conflict relates to opposing viewpoints of what is important and can be particularly evident when participants are at different career stages. Hou et al. (2023) also explore coping strategies that can lead to positive outcomes: avoiding the conflict; dominating by maintaining your viewpoint; or obliging by conceding to allow someone else’s perspectives to lead, often to avoid relational conflict. These researchers recognise that compromises can be good for finding common ground and to maintain positive relationships, but if it is the novice teachers who usually oblige or

concede, this can reinforce negative feelings around hierarchy or status (Hou et al., 2023). They conclude that the double-edged function of discourse and conflict does not necessarily lead to negative consequences. Upskilling novice teachers to express opinion and manage conflict, and building cultures of trust in which this can happen, are important considerations for those facilitating PLCs (Hou et al., 2023).

Ninkovic et al. (2022) compared their results from Serbia to other studies in different contexts. They propose that collaboration is a cornerstone of PLCs but, without trust, the function of collaboration would not successfully occur. They found that one of the most significant influences on collective teacher efficacy (CTE) in PLCs is when members have collective values and goals, as they will have greater trust and confidence in the collective impact that they can have (Ninkovic et al., 2022). The findings of this study have implications for leadership, as principals and school leaders play important roles in fostering the trust and creating the conditions needed for shared responsibility to thrive (Ninkovic et al., 2022). Collective teacher efficacy develops through a sense of shared responsibility, which can be encouraged by a distributed and consultative approach to leadership, leading to greater sustainability, motivation and impact (Ninkovic et al., 2022). Mutual trust “needs to be cultivated among teachers to generate meaningful dialogue” (Zhang et al., 2023, p.30, citing Tschannen-Moran and Hoy, 2001) and part of this process is reframing perspectives on conflict.

Wang (2016) undertook a qualitative study of two senior schools in China to investigate the role of leadership and PLCs. A culture of trust, commitment to students and teachers, and inclusive ethos while continuing to strive for excellence, were identified by teachers as being led by the school principal. Wang (2016) argues that instructional leadership has four times the impact on student outcomes as transformational leadership, but also that these approaches should not be seen as mutually exclusive, as the most impactful leadership approach is a blend of styles. Wang’s findings revealed that strong instructional leadership and visionary stewardship played important roles in developing and communicating a shared vision and shaping a culture of trust that is necessary for PLCs to flourish. The teaching staff had faith in the expertise of the leaders, both as teachers and as leaders of school improvement (Wang, 2016).

In their study of 3374 teachers, via a questionnaire distributed to 65 secondary schools, Liu and Yin (2023) found that teachers felt trusted, respected and valued by leaders when there were opportunities to be involved in school decision making processes. This illuminated the value of factors such as commitment, trust and psychological capital (Liu and Yin, 2023) to relationships between leaders and teaching staff. This is exemplified by leaders who, if they demonstrate 'normatively appropriate' behaviours, will be viewed as fair, trustworthy, honest and having a genuine interest in staff welfare (Liu and Yin, 2023).

Collaborative Culture

Hargreaves and Fullan (1992) argued that the development of a collaborative culture, in which teachers support each other to improve their practice, is a highly impactful way of improving outcomes in pupil achievement. Collaborative culture is broadly agreed in the literature as a fundamental principle of PLC effectiveness (DuFour, 2004; Stoll et al., 2006; Hord and Sommers, 2008; Zhang et al., 2023), where the collective can be more innovative than the individual (Fred et al., 2020). Bergen and Van Veen (2004, cited by Fred et al., 2020) urge the creation of new cultures where "the teacher acting individually and autonomously is replaced by collegial collaboration in which working, learning, and innovating are integrated" (Fred et al., 2020, p.271). This collective power is described by Fullan (2010) as something that "enables ordinary people to accomplish extraordinary things" (Fullan, 2010, p.72). This author goes on to explain that collaboration not only enhances the capacity of the team but can also increase productivity: "The speed of effective change increases exponentially. Collective capacity, quite simply, gets more and deeper things done in shorter periods" (Fullan, 2010, p.72).

Culture can be considered as a subsystem of an organisation, including the "norms, values, beliefs and behavioural styles of the employees" (Alvesson, 1989, p.182), and so the perspectives and behaviours of those involved in a PLC significantly impact the culture in which it exists and the impact of the PLC on school improvement (Stoll et al., 2006). The conditions leaders set to cultivate collaborative cultures should be based on shared vision and values, rather than on rules and regulations (Hord and Sommers, 2008; Zhang et al., 2023). Liu and Yin (2023) explore the

impact of ethical leadership on PLCs and consider values to be of central importance. They propose that school leaders “treat teachers with integrity, sincerity and respect to establish high-quality social exchanges; in return, teachers may feel obliged to transcend their individual interests and to orient themselves to school interests with positive work attitudes and behaviours” (Liu and Yin, 2023, p.358).

By using focus groups to research practices of eight secondary schools in The Netherlands, Fred et al. (2020) explored collaborative culture and the attitudinal and behavioural characteristics of teachers engaging in professional learning communities. They compared findings from their literature review on PLC features with interview responses from two focus groups (a leadership focus group of principals/vice principals and a teacher focus group of ten teachers). Their justification of this approach was based on the significance of practical experience: “teachers and school leaders are the experts who can contribute to translating definitions into indicators which should be especially suitable for an instrument that is constructed for use in practice” (Fred et al., 2020, p.754). From the literature and the focus groups, collaboration was the most prominent PLC feature identified. The methodology included a five-stage process moving from conceptual definitions of PLC features through to 42 behaviours and attitudes, which they refer to as indicators (Appendix 1). The following were identified by teachers and leaders as indicators of collaboration: teachers exchange experiences of their teaching; teachers request and give help to colleagues regarding teaching; teachers share and discuss teaching practice; and teachers devise and try out new didactic approaches together (Fred et al., 2020). Fred et al. (2020) conclude that collegial collaboration and a culture of collective learning can enhance or prompt further innovation, as the collective efforts of a team outweigh the potential of one teacher as an individual agent of change (Fred et al., 2020).

Hipp et al. (2008) investigated two case studies of schools in America (one primary and one middle school) on their journey towards developing learning community cultures, gathering perspectives from 50 interviews, both individual and group, with a cross-section of staff in different roles. They found that the success of a PLC relies on the value participants perceive it to have. When there is value to the work involved, there is greater likelihood of commitment from staff and, from commitment, schools can achieve and sustain collaborative cultures (Hipp

et al., 2008). Hipp et al. (2008) reflect that there is no blueprint for change and what matters to one group of staff may not be easily transferred to a different context or school. Each school has its own culture and own reality, and it is important for leaders to consider how to establish a shared value in their own context (Hipp et al., 2008). Fullan (1993) also reflects that you 'cannot mandate what matters' and, as such, any mandate relating to value is likely to have only a superficial impact on culture.

Establishing a collaborative culture can be challenging for schools and leadership teams (DuFour, 2004; Stoll et al., 2006; Hord and Sommers, 2008). With collegiality and collaboration as important characteristics of PLCs, authors warn school leaders to guard against manufacturing collaboration, a concept referred to as 'contrived collegiality' (Hargreaves, 1994; Datnow, 2011). Wang (2015, citing the work of Fullan, 2001) reflects "that there is a fine line between arranged collegiality and contrived collegiality. Cultures of professional collaboration take much more time, care and sensitivity than speedily implemented changes or hurriedly assembled teams allow" (Wang, 2015, p.911). It is important to recognise this distinction between contrived and arranged collegiality. Arranged collegiality, where time is facilitated by school leaders and PLCs are supported through organising and structuring opportunities for collaboration, is considered a feature of effective practice (Lee and Lee, 2013; Wang, 2015; Hairon, et al., 2017; Ninkovic et al., 2022).

Harris and Jones (2010) assessed PLCs through observations and discussions regarding policy implementation in 100 pilot schools in Wales prior to a national programme. One of the greatest challenges faced was when schools had particularly dominant cultures that sat at odds with those of successful PLCs. For example, where collaborative culture was not supported by effective leadership, initial enthusiasm waned and scepticism ensued. More recently, Harris and Jones (2017) reviewed the progress of this system-wide approach to Professional Learning Communities in Wales and found that, with the correct conditions in place, PLCs are effective in building professional capital and are effective models for school and system improvement. However, the authors reflect on lessons learned and implications for leadership, particularly in relation to the pace of change. The transition from pilot study to national policy was considered

too fast for all involved; getting the pace right is a valuable consideration in the change process if a culture of collaboration is to be established authentically rather than mandated. In wider programmes of improvement, the authors recognised that early surface level success can lead to political priorities changing which, in turn, derails the deeper level of change needed for a culture shift and redirects resources to new priorities. Harris and Jones (2017) reflect on the 'Improving Schools in Wales' report (OECD, 2014), and note that educators were overloaded and overwhelmed with workload and conflicting priorities, and they did not always have the time required to invest in PLCs. This was considered not a lack of willingness but a lack of time in the system.

Practical considerations and structures can serve to mitigate such pressures and support collaboration. Irby et al. (2023) investigate the advantages and challenges of using virtual platforms to facilitate a PLC. They argue that collaborative culture can be enhanced by online approaches, as many participants in their study noted the convenience of this model. They also found that a culture of collaboration between experts and less experienced teachers can be enhanced through connections across different school sites, leading to a less threatening environment and a move towards coaching approaches (Irby et al., 2023). Coaching approaches are less 'top down' and more aligned with building capacity of participants to develop their instructional leadership. In this study, some leaders drew such value from this experience that they developed coaching frameworks for their schools, leading to improved purpose, clarity and accountability in the support of new teachers (Irby et al., 2023).

Teacher Self-efficacy

Teacher self-efficacy is referenced throughout the literature on PLCs, with frequent reference to Bandura's (1977) social cognitive theory, a triadic model that shows reciprocal relationships between environmental, personal/cognitive and behavioural determinants in human behaviour (Bandura, 1977). Teacher self-efficacy is the belief that, as a professional, you have the ability and skills to have a positive influence on student learning (Klassen et al., 2009), and it has been

found that teacher self-efficacy can not only motivate students and improve outcomes but also drive teacher professional development and school improvement (Tschannen-Moran and Hoy, 2001). Where teachers are involved in professional learning communities, there is an increased willingness to participate if there is belief in individual and collective ability (Ninkovic et al., 2022). The relationship between teacher self-efficacy and PLC effectiveness can also be seen as a self-perpetuating cycle: PLCs are more effective when there are high levels of teacher self-efficacy (McPherson and Asghar, 2023); and teacher self-efficacy can be enhanced through PLC participation (Tschannen-Moran and Hoy, 2001; Zheng et al., 2019; Yada et al., 2023; Zhang et al., 2023).

Tschannen-Moran and Hoy (2001) developed the Teacher Sense of Self-efficacy scale to study three aspects of classroom teaching: student engagement, classroom management and instructional practice. This scale has been adopted by other researchers such as Zheng, et al. (2019), who used it as part of their research in China with 1082 primary teachers. Zheng et al. (2019) studied the relationship between teacher self-efficacy and five components of PLCs that had been synthesised from various models, particularly those of Louis and Mark (1998), Stoll et al. (2006) and DuFour et al. (2010). The five components studied were: shared values and goals, collaborative activity, collective sense of focus on student learning, de-privatised practices or sharing individual practices, and reflective dialogue (Zheng et al., 2019). Their results showed that participation in PLCs improved beliefs regarding classroom practices and that all five components were effective predictors of improved teacher self-efficacy. Acknowledged in their study is the significance of the cultural context of the study, where instructional activities, collaborative working, sharing of practice and working towards the collective goal are deeply rooted in societies characterised by collectivism and the practices of Chinese teachers (Zheng, et al., 2019; Zhang et al., 2023).

Yada et al. (2023) also used the Tschannen-Moran and Hoy (2001) Teacher Sense of Self-efficacy scale in their studies of 3604 primary and secondary teachers in Japan. In their comparisons, they analysed the relationship between PLCs, teacher self-efficacy and experiential learning. Their findings concurred with those of Zheng et al. (2019), who demonstrated that PLC and experiential learning had a positive impact on teacher self-efficacy. Although many of the results

were similar across the primary and secondary teachers in this study, the primary teachers reported more favourably on the impact of interactive reflection with colleagues on pedagogical change. The researchers propose the reason for this is that primary teachers can find more value in this as they often work in PLCs with colleagues teaching a similar curriculum, whereas secondary teaching PLCs often comprise cross-department groups who find it more challenging to reflect on pedagogical approaches across different subject specialisms (Yada et al., 2023). Fred et al. (2020) explore the role of leadership in this area through the concept of “shared responsibility” as a steering factor, where leaders should mitigate the challenges faced by subject specialism by “initiating and developing a vision” and creating collaborative time and space (Fred et al., 2020, p.761).

In exploring the concept of collaborative enquiry, Zhang et al. (2023) propose that teacher self-efficacy improves when collaborative enquiry is fostered. In their study of 982 primary and secondary teachers from 31 schools, these researchers used the Professional Learning Community scale, the Teachers’ Self-Efficacy for Instructional Strategy scale, and the Teachers’ Job Satisfaction scale to develop a questionnaire to gather quantitative data. These scales draw on other valid and reliable research studies (Zhang et al., 2023). To understand the effects of teacher-centric and organisational-centric PLCs, Zhang et al. (2023) divided these scales into eight sub-scales. The sub-scales and characteristics considered as teacher-centric were collective enquiry and sharing of practice, shared purpose and responsibility, and informal collaboration. The sub-scales and characteristics of organisation-centric PLCs were the impact of organisational structure, supportive leadership, collaborative relationships, institutional barriers, and cultural barriers. In this study, they found that teacher self-efficacy and job satisfaction improved when professionals were engaged in ‘teacher centric’ PLCs: “when teachers commit to collective vision and responsibility, and establish collaborative relationships with their colleagues, they tend to be more satisfied and passionate about their work” (Zhang et al., 2023, p.29).

McPherson and Asghar (2023) explore the impact of PLCs on self-efficacy. They studied two PLCs in Canada across two years of observations and recording of group discussions. They found that providing opportunities for teachers to take ownership of a PLC resulted in leadership of their own learning process and self-generated a culture where teams of staff deemed professional

growth to be important. They defined successful PLCs as those that maintained teacher self-efficacy in developing their practice: "we operationalised success as teachers' sustained interest in developing sophisticated and innovative pedagogy" (McPherson and Asghar, 2023, p.5). Evidence of interest in and commitment to a PLC can be derived from the language used when describing PLC membership, which McPherson and Asghar (2023) refer to as "insider-outsider categories". The use of pronouns gives valuable insight into investment, engagement and motivation to learn, and exemplifies participants' perception of their professional identity. McPherson and Asghar (2023), when analysing language used by secondary science teachers involved in PLCs, interpreted the use of 'I' discourse rather than 'we' as evidence of a self-indexed activist of the PLC and an 'agentic stance'. The use of 'you' suggested a more instructional perspective. The use of pronouns such as 'they' or 'them' while describing negative behaviours or approaches within the PLC highlighted a preference for criticising the behaviours of others over genuine self-reflection (McPherson and Asghar, 2023).

Lack of teacher self-efficacy may not necessarily indicate a lack of commitment to the professional learning community and apparent resistance may be caused by resource constraints, especially relating to time (Jones and Thessin, 2017; Chua et al., 2020). McPherson and Asghar (2023) found in their research that even those who valued the PLC missed or cancelled planned meetings to focus on other tasks, such as planning lessons or meeting with pupils. Resistance or lack of action, therefore, can be the result of competing priorities or tensions, such as time pressures to deliver the curriculum (McPherson and Asghar, 2023). Due to the sample size of this study (two teachers from two PLCs), caution should be drawn from considering this as the view of all teachers.

Jones and Thessin (2017) examined an American high school that moved towards becoming a learning organisation by creating a context for change, implementing PLCs, and sustaining this through a cycle of continuous improvement. This study used a mixed methodology approach, using questionnaires, interviews and document analysis to interrogate the perspectives of those involved and to focus specifically on the change process, an aspect Jones and Thessin (2017) identified as an area of limited research. This study found that to "establish and sustain effective PLCs that will contribute to the learning organization's capacity to continuously improve,

participants in the PLCs must develop their own capacities as effective contributors” (Jones and Thessin, 2017, p.14). The importance of the principal’s role in capacity building was highlighted, which could be supported by providing a focus on student outcomes, communicating and establishing a shared vision, providing the resources required (including time and space) and modelling behaviours and dispositions that foster trust. Hallinger (2003) also proposes that the behaviours of leaders influence culture, with collaborative leadership styles leading to collaborative cultures among the wider staff team (Hallinger, 2003).

Qu et al. (2022) found in their study of 573 teachers in 238 PLCs in China that “humble leadership improves teachers’ knowledge-sharing in professional learning communities by ameliorating teachers’ concern for taking interpersonal risks and improving teachers’ psychological empowerment” (Qu et al., 2022, p.1). The leader's responsibility to invest in staff, facilitate the PLC and to improve the capacity of staff at all stages was evident.

Wang’s (2016) qualitative study of two senior schools in China highlighted that distributed leadership was an important feature of PLC success, maximising the expertise of different pedagogical experts from across school communities. The role of the principal, although considered an expert, was not to lead the professional learning but to organise and facilitate the PLCs. One principal highlighted that “an explicit structure is important to get things in order” (Wang, 2016, p.211). Sharing the leadership of PLCs across the school community empowered teachers and both schools referenced the impact this had on teachers’ professional attitudes and self-value. However, some participants in this study found that, due to the high performing nature of the school, although collaborative professional learning enhanced the culture, emotional bonds and teaching approaches of those involved, teacher innovation was not valued in the same way as examination grades. In comparing the differences between the two schools, Wang (2016) concludes that there is no ‘one size fits all’ approach to PLCs and that context matters.

Section 5 – Discussion, Implications and Recommendations

This study compared findings from research in order to explore key considerations for leaders promoting collaborative approaches to improvement through professional learning communities. The research shows that PLCs can have a positive impact on teaching and learning practices and on learners' experiences and outcomes, but that certain features and conditions have an impact on their effectiveness. From a synthesis of the literature, the researcher has established three themes worthy of consideration by leaders who wish to facilitate successful PLCs: trust, collaborative culture and teacher self-efficacy.

5.1 Discussion

Trust is an important component of a school's culture, and the findings show that trust is a central characteristic of successful professional learning communities (Hofman and Dijkstra, 2010; Bowe and Gore, 2017; Liu et al., 2019; Meeuwen et al., 2020; Ninkovic et al., 2022; Liu and Yin, 2023; Zhang et al., 2023). Where trust is established, teachers tend to 'deprivatise' their practice and become more open to evaluative, collegial and reciprocal activities that can improve teacher self-efficacy (Bowe and Gore, 2017). Mature and successful PLCs are characterised by empowering and trusting relationships that promote feelings of psychological safety and psychological capital (Liu and Yin, 2023). Leaders can motivate teachers to participate in PLCs through nurturing positive and sustained relational trust, and they have an important role in modeling behaviours such as trustworthiness, fairness and honesty in order to create safe spaces in which teachers can experiment (Ninkovic et al., 2022; McPherson and Asghar, 2023). The findings suggest that this perception of safety is enhanced when working with others who have a shared vision and values of what is important (Hofman and Dijkstra, 2010; Wang, 2016; Meeuwen et al., 2020). The concept of vulnerability is also presented in the findings as an important characteristic of trust, as openness to feedback and honest reflection are features of schools with strong relational trust (Kelly, 2013; Ninkovic et al., 2022). The research suggests, however, that it is important to be aware of negative forms of vulnerability, such as the type felt by less experienced teachers, which is an area that leaders can address by upskilling novice teachers to express their opinions (Hou

et al., 2023). It is also important to note that feedback, openness, reflection and trust do not necessarily lead to harmony. In fact, conflict is inevitable in cultures that welcome discourse, divergence of opinion and reflection (Zhang et al., 2023), and can often be an instigator of positive change. In the context of PLCs, conflict can be goal orientated, relational orientated or task orientated conflict and it is important to be aware of the nature of conflict but also to build healthy cultures in which conflicts are resolved (Hou et al., 2023; Zhang et al., 2023). The findings suggest that leaders can do so by establishing shared values and beliefs that are centered on improving outcomes for learners, promoting shared responsibility and involving teachers in the decision-making processes of the school (Wang; 2016; Ninkovic et al., 2022; Hou et al., 2023; Liu and Yin, 2023; Zhang et al., 2023). The findings also suggest that different leadership styles can support effective PLC leadership: although transformational leadership may have more impact, instructional leadership and visionary stewardship are also important when building a culture of trust in which PLCs can thrive (Wang, 2016).

The findings show that collaborative culture is a fundamental principle of professional learning community effectiveness (DuFour, 2004; Stoll et al., 2006; Hord and Sommers, 2008; Zhang et al., 2023). A culture that promotes the collective efficacy of staff has the power to improve innovation, lead to improvements and achieve change at a greater pace (Fullan, 2010). However, getting the pace of change right is a valuable consideration for leadership in any change process. The findings suggest that change that is implemented too quickly, or mandated or policy-driven, can be met with resistance or lack sustainability (Harris and Jones, 2017). In harmony with the research on trust, the findings suggest that leaders can create collaborative cultures through communicating a shared vision and exhibiting strong values, such as treating teachers with integrity, sincerity and respect (Hord and Sommers 2008; Lui and Yin, 2023; Zhang et al., 2023). In practice, a collaborative culture is exemplified by the behaviours of participants and the findings show that engaging staff in reflection in this area allows for norms to be established in the community (Fred et al., 2020). Collaborative culture relies heavily on the investment and commitment of staff and the findings suggest that the value of the PLC is central to this (Hipp et al., 2008). This requires consideration for leaders, who must understand that

value cannot be mandated (Fullan, 1993) and that each context has a unique culture that is created and sustained by its members (Hipp et al., 2008). The findings show that there can be barriers to PLC success, with time, workload and conflicting priorities being cited as the most significant. Resistance should not always be seen as a lack of willingness (Harris and Jones 2017), and it is the role of leaders to mitigate barriers and to create the conditions where collaboration can flourish (Irby et al., 2023). However, care must be taken to avoid contrived collegiality, where collaboration is manufactured and imposed (Hargreaves, 1994; Datnow, 2011; Wang, 2015), and leaders should aim instead for arranged collegiality, where the practicalities of collaborative working are facilitated and supported by leadership at all levels (Datnow, 2011; Lee and Lee, 2013; Wang, 2015; Hairon, et al., 2017; Ninkovic et al., 2022).

Self-efficacy in teachers has the power to have a positive influence on student learning, professional development and school improvement (Tschannen-Moran and Hoy, 2001; Klassen et al., 2009) and can be demonstrated by shared values and goals, collective focus on learning, collaborative activities, de-privatised practice and reflective dialogue and feedback (Zheng et al. 2019). The findings suggest that PLC effectiveness relies on teacher self-efficacy (Ninkovic et al., 2022; McPherson and Asghar, 2023), and that PLC participation also improves teacher self-efficacy (Tschannen-Moran and Hoy, 2001; Zheng et al., 2019; Yada et al., 2023; Zhang et al., 2023). They also suggest that colleagues in primary education, due to similarities in curriculum and teaching approaches, can be more positive than secondary teachers about collaboration and, in turn, experience greater collective efficacy (Yada et al., 2023). Leaders can aim to address these barriers in secondary schools through promoting shared responsibility, establishing student-centred visions, and resourcing collaborative time and space (Fred et al., 2020), all of which align with leadership approaches that create collaborative cultures and build trust. Teacher-centric PLCs, which are characterised by collective enquiry and sharing of practice, shared purpose and responsibility, and informal collaboration, prove to generate greater teacher self-efficacy and job satisfaction and self-generate a culture of professional development (McPherson and Asghar, 2023; Zhang et al., 2023). Although scales have been derived to evaluate self-efficacy (Tschannen-Moran and Hoy, 2001; Zhang et al., 2023), language analysis can also be

useful, as the use of 'I' rather than 'they' can reflect PLC ownership and suggests participants' engagement, motivation and commitment (McPherson and Asghar, 2023). The findings also show that apparent resistance or deflection can often be due to divergent priorities or resource constraints, especially due to the limitation of time (Jones and Thessin, 2017; Chua et al., 2020; McPherson and Asghar, 2023). This is an important consideration for leaders when discussing PLC progress with participants. To develop as a learning organisation (seeking a cycle of continuous improvement), shared responsibility, individual teacher self-efficacy and collective teacher efficacy are essential. Leaders can promote this capacity to continuously improve through actively distributing leadership, promoting a shared vision, modeling behaviours, being student-centred, and ensuring the required resources, structures and conditions are provided (Jones and Thessin, 2017).

5.2 Implications and Recommendations

The findings of this study present implications for leadership, for policy, and for further theoretical and practical research. Implications for leadership are of direct relevance to the professional context of the researcher, who is a leader exploring the value of collegial and collaborative approaches to school improvement and the potential for professional learning communities to enhance pupils' learning experiences.

5.2.1 Implications and Recommendations for Leadership

The findings from the empirical studies have formed a conceptual guide for the researcher to draw upon, with direct relevance to PLC implementation but also to the researcher's continued professional development as a school leader. Through synthesising the findings and themes of the literature, the following five implications for leadership have emerged.

Leaders should communicate a student-centred vision. To create a culture in which effective professional learning communities can be created and sustained, school leaders must initiate and

develop a shared vision that is pupil-centred and sharply focused on improvements to teaching and learning, and to student experiences and outcomes.

Leaders should promote shared values. If professional learning communities are to thrive, leaders must establish and nurture collaborative cultures based on shared values. These values should include kindness, openness, honesty and trust, so that teachers feel a sense of safety as they experiment, share practice and seek feedback.

Leaders should build capacity through shared responsibility and distributed leadership. To support collaborative approaches to professional development, school leaders should use collaborative leadership styles, where responsibility is shared and leadership is distributed. By doing so, leaders promote individual and collective teacher efficacy, and build capacity for continuous improvement, thereby creating learning organisations and self-generating cultures where professional development is valued.

Leaders should provide structure and support. As opposed to ‘contrived collegiality’, leaders should aim for ‘arranged collegiality’, where they provide the structure and resources required for PLCs to work well. In addition to the support that is provided by cultures built on trust and shared values, leaders should plan for and mitigate barriers to PLC commitment, especially lack of time, and recognise when apparent resistance is a manifestation of a specific challenge that could be addressed through practical or collegial support.

Leaders should model desired attitudes and behaviours. If leaders are to support and nurture collaborative approaches to professional development, they must model all that they expect from their colleagues. Although communicating vision, values and expectations is important, it is only through exhibiting them that leaders can demonstrate their integrity and inspire a collective, committed approach from the school community. As such, in order to nurture professional learning communities in their school, leaders should collaborate, take responsibility, reflect, demonstrate self-efficacy, and embody the vision and values that they promote.

5.2.2 Implications and Recommendations for Policy

The importance of collaboration in Scottish education is evident in national policies and guidance documents, and collective empowerment, leadership of learning and teacher agency are also prominent in national leadership programmes. However, Scottish education policies do not promote professional learning communities as formally or as explicitly as some other countries do, such as Australia (Australian Government and The Australian Institute for Teaching and School Leadership, Professional Learning Communities Strategy), New Zealand (New Zealand Ministry of Education, Communities of Learning Kahui Ako), Wales (Welsh Government, Professional Learning Community Guidance) and some US states (Arkansas Department of Education, PLC at Work Project). New Zealand policy, for example, states that all schools are given dedicated enquiry time, in order to build strong cultures of collaboration (New Zealand Ministry of Education, 2023). In a literature review giving an overview of the implementation of Communities of Learning in New Zealand, Constantinides and Eleftheriadou (2023) propose that, as one of four key findings, that system-wide coherence is required: “Successful policy implementation requires both reflecting a high level of alignment in the policy environment, shared expectations and resources, and creating a sense of coherence that policies are consistent and comprehensible to those who experience them” (Constantinides and Eleftheriadou, 2023, p.14). Clear policy on PLCs can help to avoid misinterpretation and support deep understanding of the theoretical and practical considerations that can ensure impact on classroom practice, school improvement and learner outcomes (Welsh Government, 2013), and it may be that the Scottish education system considers a similar approach to policy in the future.

In the researcher's context, this study also presents potential implications for school policy. Emphasis should be on a policy that informs, guides, structures and supports (Vescio, et al., 2008), rather than one that mandates what should matter to others (Fullan, 1993). It is also important to recognise that policies are not always forms of text as they can also be discourses that drive norms, expectations and behaviours in school (Ball, 2015). Policies can be legislative and mandated, but they can also take soft yet hugely influential forms that shape cultural expectations from within an organisation (Ball, 2015). With this distinction in mind, the researcher must not overlook the potential power of discourse to shape attitudes, behaviours

and cultural norms. In order to support the overall aim of developing leaders of learning, promoting self-efficacy and building capacity, the researcher should consider establishing PLCs through effective application of the research on vision, values, shared responsibility, support and modelling, and subsequently create a school policy that reflects the collaborative culture of the community.

5.3 Suggestions for Future Research

This study explores a range of research on PLCs, with specific emphasis on the value and benefits of PLCs; the key features of successful PLCs; the challenges and barriers that can exist; and the implications for leadership. Suggestions for future research by this researcher would involve an empirical study of the initiation and implementation of PLCs in the researcher's school. This could employ tools used by other researchers in this field to measure the success and impact of PLCs, such as questionnaires, semi-structured interviews and evaluative scales.

5.4 Limitations

This study and paper have some potential limitations. Each study is situated within a specific context, which presents limitations related to comparing findings as each context has a unique culture that is created and sustained by its members (Hipp et al., 2008). There is, therefore, some level of uncertainty around the reliability of comparing, contrasting and synthesising findings from different contexts.

While every effort has been made to be objective, this study originates from the researcher's aim of investigating the potential of professional learning communities to improve teaching and learning and the experiences and outcomes of learners. There is, therefore, an implicit suggestion that the researcher may look for evidence to justify their instincts. The researcher has aimed to address this through deliberate awareness of this potential bias, and an openness from the outset to finding evidence that may contradict their initial aim.

A further limitation relates to the scope of the study. Entering this study, the researcher had not appreciated the wealth of research available. The inherent timeframe of this study limited the

researcher, as the volume of potentially relevant articles initiated by the original search was too large for one researcher to review. The researcher addressed this by refining the initial search using a methodology that was appropriate to their context, but this does create a potential limitation that this may be less reliable or robust than a review of a wider sample of research.

Section 6 – Conclusion

Conclusion

As a school leader, the researcher wishes to develop their organisation as a learning community through establishing a collaborative culture, built on mutual trust, where teacher-centric PLCs have an impact on teaching and learning. Understanding the research on PLCs has provided a foundation for planning, initiating and evaluating PLC implementation, and an appreciation for the complexities and nuances involved. The researcher aims to develop teacher self-efficacy to promote collective professional development, drive school improvement and reframe the whole school as a learning organisation, and understands that this will require a leadership approach that shares responsibility, distributes leadership and builds capacity for continuous improvement. Fundamental to these aims are the importance of shared values and vision, which must be sharply focused on the experiences and outcomes of students, modelled by those who lead and sensitive to the professional challenges that their colleagues may face. School leaders must build the culture, provide the resources and create the conditions in which professional learning communities can flourish, with the collective aim of improving experiences and outcomes for all learners.

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Appendix 1

Summary of 11 characteristics, 2 steering factors and 42 behavioural and attitudinal indicators from Fred et al. (2020).

PLC Clusters	PLC Characteristic or Steering Factor*	Behavioural or Attitudinal indicators	
Individual and Collective learning	Collaboration	1	Teachers exchange experiences of their teaching;
		2	Teachers request and give help to colleagues regarding teaching;
		3	Teachers share and discuss teaching practice (i.e. opinions, experiences, approaches, materials, technologies)
		4	Teachers devise and try out together new didactic approaches (i.e. lessons, projects, tests, technologies).
	Reflection	5	Teachers reflect individually or jointly on their teaching practice (including behaviour, competencies and attitudes);
		6	Teachers use various forms of reflection.
	Giving and receiving feedback	7	Teachers provide colleagues with feedback on their teaching;
		8	Teachers receive feedback from colleagues on their teaching;
		9	Teachers use different kinds of feedback (including lesson observation).
	Experimenting	10	Teachers try out and experiment with (new) parts of their teaching practice (such as new or other insights, materials, lessons, teaching methods, skills, educational approaches, technologies);
		11	Teachers implement and evaluate teaching practice;
		12	Teachers research teaching practice in a cyclical way as a recurrent activity.
Group Dynamic Characteristics	Mutual Trust and Respect	13	Teachers trust and appreciate each other;
		14	Teachers display openness to each other;
		15	Teachers discuss different attitudes, opinions and problems with each other.
	Collegial Support and Encouragement	16	Teachers show an interest and mutual care in each other;
		17	Teachers help each other if necessary.
	Social Cohesion	18	Teachers like to belong to the team/PLG;
		19	Teachers feel accepted in and appreciated by the team/PLG;
		20	Teachers feel involved in the functioning of the team/PLG

Professional Orientation	Shared Vision	21	Teachers develop and adjust a shared vision on teaching;
		22	Teachers act in accordance with the shared vision.
	Shared Responsibility	23	Teachers confer with each other on teaching practice and students' results;
		24	Teachers take action individually or jointly when students' results give rise to it.
		25	Teachers account for the teaching practice and students' results amongst each other.
	Shared focus on student learning	26	Teachers collect and analyse information in various ways on student learning;
		27	Teachers evaluate and value the results of their teaching practice and deduce improvements from it;
		28	Teachers, in their teaching practice, take into account differences between students (differentiates instruction);
		29	Teachers work at a good pedagogical relationship with students.
	Shared focus on continuous learning	30	Teachers enjoy working with and the learning of students;
		31	Teacher reflects on their own professional development as a teacher;
		32	Teachers engage in professional development activities to become a better teacher;
		33	Teachers try out new teaching methods/ways of teaching to improve their lessons and make them more interesting and more pleasant.
Steering Factors	Leadership*	34	Teachers experience that the principal ensures the development a shared vision on the learning of students and on teachers' professional development and sets a course for the school;
		35	Teachers experience that the principal stimulates, advances and monitors the primary process and students' performance;
		36	Teachers experience that the principal follows and simulates their individual and collective professional development;
		37	Teachers experience that the principal provides space for teachers to configure their teaching practice the way they see fit, within the school's framework;
		38	Teachers' experiences that the principal takes the school vision as the starting point for his work and translates this vision to other domains of the school organisation.
	Professional autonomy*	39	Teachers, individually or jointly, have a say in and control over their work processes;
		40	Teachers have a say in and control over their own professional development;
		41	Teachers use, in consultation with colleagues, the possibility to take decisions and/or to influence decision making;
		42	Teachers act pro-actively and account for the quality of their teaching practice and professionalisation.

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