Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Professional Learning Communities for Enhancing Professional Capital and Improving Learning

Javier de la Hoz-Ruíz

jdelahoz@unizar.es

University of Zaragoza

Jesús Domingo Segovia

University of Granada

Marta Olmo-Extremera

University of La Laguna

Systematic Review

Keywords: Professional Learning Communities, professional capital, educational inclusion, educational leadership, educational technologies

Posted Date: October 30th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10973117/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Professional Learning Communities for Enhancing Professional Capital and Improving Learning

Javier de la Hoz-Ruíz[1] (corresponding author), Jesús Domingo Segovia[2], Marta Olmo-Extremera[3]

[1] Department of Education Sciences, Faculty of Social and Human Sciences, University of Zaragoza, Teruel, Spain
[2] Department of Didactics and School Organization, Faculty of Education Sciences, University of Granada, Granada, Spain
[3] Department of History and Philosophy of Science, Education and Language, University of La Laguna, La Laguna, Spain
Corresponding author email: jdelahoz@unizar.es

Abstract

Professional Learning Communities (PLCs) have emerged as effective frameworks that foster inclusive, collaborative, and resilient environments. These communities promote cooperation among teachers and build social and professional capital, essential for continuous improvement in education. It presented a study that exploring the current state of research on how Professional Learning Communities enhance professional capital to improve learning outcomes. A scoping review of the literature indexed in Web of Science and Scopus was conducted. The search identified 53 records. After removing duplicates and studies that did not meet the inclusion criteria, 43 papers were finally included in the review The findings highlight that research studies on Professional Learning Communities focus mainly on improving learning outcomes, and to a lesser extent, on inclusion and social justice. In addition, distributed and transformational leadership significantly influences educational outcomes. Also, when it comes to PLC, qualitative studies are most often employed. As well, effective organizational conditions are essential for building collaborative networks and improving effectiveness in PLC. How conclusions need to broaden professional interactions between school and community to achieve an increase in professional and social capital, as well as to build shared governance. In addition, mapping common purposes among all actors, decision-making capital, that makes up an educational ecosystem with more inclusive and collective approaches to achieve equitable and effective educational outcomes.

Keywords: Professional Learning Communities, professional capital, educational inclusion, educational leadership, educational technologies.

Resumen

Las Comunidades Profesionales de Aprendizaje (CPA) se han consolidado como marcos eficaces que fomentan entornos inclusivos, colaborativos y resilientes. Estas comunidades promueven la cooperación entre docentes y generan capital social y profesional, factores esenciales para la mejora continua de la educación. Con este sentido, se presenta un estudio que explora el estado actual de la investigación sobre cómo las CPA mejoran el capital profesional y con ello los resultados de aprendizaje. Para ello, se realizó una revisión exhaustiva de la literatura indexada en Web of Science y Scopus. La búsqueda identificó 53 registros; tras eliminar duplicados y trabajos que no cumplían los criterios de inclusión, se incluyeron finalmente 43 estudios. Los hallazgos destacan que las investigaciones sobre CPA se centran principalmente en la mejora de los resultados de aprendizaje y, en menor medida, en la inclusión y la justicia social. Además, el liderazgo distribuido y transformacional influye significativamente en los resultados educativos. Asimismo, en el caso de las CPA los estudios cualitativos son los más utilizados. También, las condiciones organizativas efectivas son esenciales para construir redes de colaboración y mejorar la eficacia de las CPA. Entre las conclusiones, se destaca la relevancia de ampliar las interacciones profesionales entre la escuela y la comunidad para lograr un aumento del capital profesional y social, así como para construir una gobernanza compartida. Además, mapear propósitos comunes entre todos los actores educativos y el capital en la toma de decisiones conforman un ecosistema escolar con enfoques más inclusivos y colectivos para lograr resultados educativos equitativos y efectivos.

Palabras clave: Comunidades Profesionales de Aprendizaje; capital profesional; educación inclusiva; liderazgo educativo; tecnología educativa

Introduction

The importance of schools transitioning toward professional community models to enhance learning is well documented internationally (Bolam et al., 2005; DuFour & Eaker, 2008; Hargreaves & O'Connor, 2018; Stoll & Louis, 2007). These models are also highly effective in promoting educational justice, equity, and inclusion (Ainscow,

2016; UNESCO, 2021). Within this body of literature, there has been significant development in the study of leadership for learning within these communities (Bolívar, 2019; Leithwood et al., 2020). Similarly, there is frequent discussion about the professional interrelations and collaborative learning of teachers in these communities (De Jong et al., 2021; Wenger, 2011). However, a critical question arises: How can we simultaneously enhance teachers' agency, broaden their engagement, and foster authentic participation and professionalism while creating opportunities for the inclusion of diverse educational and community agents?

Emerging improvement scenarios emphasize the importance of the authentic participation of various agents, actors, and new democratic governance models. These elements, combined with the agency of teachers, can help expand professional capital inside and outside schools. This occurs around a shared community purpose that addresses current challenges, such as inclusion, justice, and improving educational outcomes for all (Bolívar, 2020; Hargreaves & Fullan, 2020; Rincón & Fullan, 2016). Professional Learning Communities (PLCs) represent a relevant response to these challenges (Hargreaves & O'Connor, 2018), as well as a proposal for educational innovation. It is a school model, with a consolidated concept, as Stoll and Louis (2007) indicate that PLCs promote professional learning among teachers, in a cohesive context, with collective knowledge and within an interpersonal ethic of care that permeates the lives of teachers, students and principals. Alongside this organizational learning, it has nowadays transmuted into Communities of Professional Practice (CpP), which are considered as groups of people who perform the same activity or responsibility, share a concern or passion for something they do and learn how to do it better through regular interaction with their co-workers (Wenger 2001). Therefore, PLCs create the right conditions for collective knowledge building and knowledge sharing. This requires redesigning schools and expanding their collaborative networks between schools and socio-educational networks with the local community (Bolivar and Domingo, 2024). Professional and social capital helps to create professional and personal learning network processes and structures. It opens up space to address other more emotional and psychic needs of the teacher, the student and any other individual related to the education space.

This scoping review explores how the concept of community extends beyond teacher collaboration and collective learning to include the enhancement of social and

professional capital within schools and their wider communities. It focuses on the development of expanded professional communities and examines the themes and dimensions of learning prioritized by these communities of practice to increase their professional capital.

2. Background

2.1. Development of the professional learning communities concept

The concept of communities has been examined from various perspectives, reflecting its complexity and evolution (DuFour & Eaker, 2008; Stoll & Louis, 2007; Wenger, 2011). Professional learning communities are educators who collaborate to enhance their practice and improve student learning, with an emphasis on a shared commitment to ongoing professional development (Bolam et al., 2005; Stoll et al., 2006). Initially, research on these communities focused on teacher collaboration within schools. Over time, however, the concept has expanded to include interactions with other educational and community stakeholders (Hargreaves & Fullan, 2020).

Canuto (2012) and Swinnen (2015) highlight that forming communities requires a shared identity and meaningful interaction among its members. Mazmanain (2017) and Mazmanian (2008) stress the importance of sustainable communities, particularly through the lens of environmental policy. Tebes (2014) explore both theoretical and practical elements of community formation. Tebes (2014) emphasizes the dynamic and evolving nature of communities, while Bermejo (2019) investigates the role of legislation and institutional frameworks in stabilizing community structures. Additionally, Nevola (2011) and Bogenrieder (2004) discuss diverse perspectives on the urban and organizational dimensions of communities.

It is clear that the concept of Professional Learning Communities has undergone significant development, resulting in various types and generations. The works of Hargreaves and O'Connor (2017) and Tushnet (2017) have provided key insights into these developments:

5. **First generation**: This initial phase of Professional Learning Communities focused on individual professional development, informal interactions, and contextualized discussions (Crecci, 2018; Falk, 2014; Kwak, 2015). This approach proved effective, particularly for early

childhood educators (Scotese, 2014). These communities were guided by relational leadership (Thornton, 2014) and supported by mentoring as a tool for professional growth (Good, 2005). The classroom served as the primary space for professional development (Studans, 2003), with a strong emphasis on initial and continuous teacher learning (Falk, 2014).

6. **Second generation**: In the second generation, Professional Learning Communities shifted towards collective and collaborative learning. This phase emphasized joint reflection and problem solving (Schechter, 2007), fostering collaborative contexts (Iborra, 2009), and interdisciplinary learning communities (Sanches, 2022). Collaborative professional learning became central, requiring individuals to take personal responsibility for their learning (Kennedy, 2016) and later share those insights with the broader community.

7. **From the second to the third generation**: The transition from the second to the third generation marked a move toward a more holistic and integrative approach. This stage emphasizes professional development within the school, institutional learning, and its impact on all students' learning and educational inclusion. Collaboration extends beyond the traditional confines of the school (Taib, 2013), promoting broader community participation, the practical application of learning, and the development of social and professional capital.

According to Stoll et al. (2006), a Professional Learning Community (PLC) is characterized by continuous, reflective, collaborative, inclusive, and improvement-oriented practices. Its foundation lies in the daily work of teachers, driven by a focus on change and improvement (Stoll, 2010). Moreover, the scientific literature (Chen, 2020; DuFour, 2004; Grift, 2010) emphasizes that a PLC aims to enhance teaching quality, disseminate educational reforms, and improve student learning. For instance, the shift to online learning during the COVID-19 pandemic (Tucker, 2021) exemplifies the practical application of PLC principles, supported by competency-based didactics and collaborative professionalism.

However, PLCs have evolved over time and have been influenced by changes in the social and educational landscape. This evolution has prompted research centered on learning and teaching practices (Mercieca, 2017). Additionally, technology has played a significant role, particularly as a tool for creating social networks and support systems for development (Robinson, 2021). Studies such as that of Quinn (2009) demonstrated

the effectiveness of promoting learning and knowledge sharing through such networks, while Cristol (2017) and Dias (2014) highlighted the power of digital learning communities as tools for fostering learning.

As PLCs have developed, other community-related concepts have also emerged. For instance, Wenger (1999) introduced the concept of a Community of Professional Practice (CpP), which extends the idea of community to encompass groups of individuals united by a shared concern or passion (Mercieca, 2017). A CpP comprises people with common interests who learn and work together (Bannister, 2005). Learning within a CpP connects directly to the work context and interpersonal relationships within an organization (Bolivar & Domingo, 2024). Additionally, CpPs have evolved to function both in physical and virtual spaces (Keleher, 2010).

A community's ultimate development occurs when transitioning into a professional learning network (PLN) (Robinson, 2021). PLNs are characterized by new governance structures, supportive agents, and a strong commitment to the local and social community.

2.2. Professional capital and collaborative professionalism

A key element of an educational community is the culture of collaboration, which is essential for working toward collective goals and learning together. This requires structures that promote collaboration, professional dialogue, and transforming schools into Professional Learning Communities. Bolivar and Domingo (2024) highlight that collaboration involves teachers collectively analyzing and improving their practices. However, for collaboration to have a meaningful impact on learning improvement, it must include all educational community members, such as students and families.

Collaboration also plays a critical role in building social networks and fostering social capital, directly influencing students' academic success (De Jong et al., 2016). Social capital refers to the relationships among students, teachers, and families, which enhance academic performance and participation in social activities (Coleman, 1990). This social capital is closely linked to professional capital, which reflects professional effectiveness and is strengthened by a collaborative culture focused on learning (Hargreaves & O'Connor, 2020).

The development of social and professional networks within the educational environment facilitates the exchange of ideas and knowledge, contributing to the success of both teachers and students (Parlar et al., 2019). Additionally, interactions between teachers and students play a vital role in improving educational practices (Bridwell-Mitchell, 2017).

2.3. Community and professional capital for improving learning by, for, among all.

Improving learning requires ensuring students, teachers, and the school progress toward higher educational goals. Effective learning goes beyond mere knowledge acquisition to foster critical thinking, life skills, and personal growth. Key factors driving this process include a collaborative environment, active participation from all educational stakeholders, and shared pedagogical leadership. True improvement must be inclusive, meaning it should benefit all students, regardless of their circumstances. Additionally, learning improvement should address students' academic progress, teachers' professional development, and the school's evolution as a cohesive educational community. Learning improvement can be categorized into three main objectives:

8. **Improving learning outcomes:** PLCs are central to improving learning outcomes by fostering student engagement in their own education and promoting their integration into the school community. This focus extends beyond academic achievement to include developing civic and life skills (Cassidy, 2018; Grupta, 2016; Schnabel, 2016). According to Hargreaves and Fullan (2014), PLCs provide a strong foundation for school improvement by supporting professional learning and cultivating pedagogical leadership that encourages reflective practices within the school. PLCs also encourage collaboration among school community members, creating a network of mutual support that enhances teaching and learning (Baker, 2013; Uzunboylu, 2012). By incorporating ICT and educational networks, these communities expand their impact beyond the school setting, facilitating the transfer of knowledge and enhancing learning for all students (Hart, 2011; Star, 2014).

9. **Improving social inclusion and social justice:** Inclusion is an ongoing process that necessitates systemic changes and the development of a school culture that values diversity and champions social justice (Perugachi, 2016; Yarskaya-Smirnova, 2015). PLCs are pivotal in fostering the genuine participation of diverse stakeholders, such as families and community members, in inclusive education (Valls, 2000). Thus, PLCs not

only support collaborative learning but also serve as an effective model of inclusion, emphasizing respect for human rights and diversity (Colmenero, 2015; UNESCO, 2016). Research also underscores the importance of creating environments that encourage community engagement to promote social inclusion (Domínguez, 2016; Fujimoto, 2014). These environments facilitate meaningful interactions between schools and external agents to tackle issues of exclusion and inequality (Yancey, 2003; Johnstone, 1999). According to UNESCO (2016), education can foster social cohesion and, by embracing diversity, contribute to greater educational equity.

10. Preventing school failure: The prevention of school failure is also supported by the work of PLCs, which cultivate an inclusive culture spanning both the academic and social spheres. By operating within collaborative networks, PLCs help identify risk factors that could lead to school failure at an early stage and create collective strategies to address these challenges (Bolivar & Domingo, 2024). Moreover, a strong focus on teachers' professional development and the establishment of socio-educational networks provide essential support for the most vulnerable students, aiding in preventing school failure (Azorín et al., 2022). PLCs promote a holistic approach to education, which emphasizes not only academic success but also the personal and social development of students. This comprehensive approach contributes to more effective prevention of school failure (Woodland & Mazur, 2019).

11. Methodology

This scoping review followed the methodological framework proposed by Arksey and O'Malley (2005), later refined by Levac, Colquhoun, and O'Brien (2010), in order to ensure a transparent and iterative process. Accordingly, the review was conducted through the following stages: (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarising and reporting the results. In line with more recent guidance for educational and health-related scoping reviews, the reporting also adhered to the PRISMA-ScR checklist (Tricco et al., 2018), and the principles disseminated by the Joanna Briggs Institute for evidence syntheses (Peters et al., 2020). This allowed us to align the initial computer-science based protocol (Kitchenham & Charters, 2007; Petersen et al., 2008) with standards more commonly used in educational research.

3.1. Stages of the review

Consistent with the above-mentioned frameworks, our procedure comprised five stages:

1) Identifying the research question: we formulated the overarching question on how Professional Learning Communities (PLCs) have been conceptualised, implemented and assessed in recent educational research.

Q1: How has research been conducted on communities aiming to increase professional capital for learning improvement?

Q2: What are the main research themes on communities aiming to increase professional capital for learning improvement?

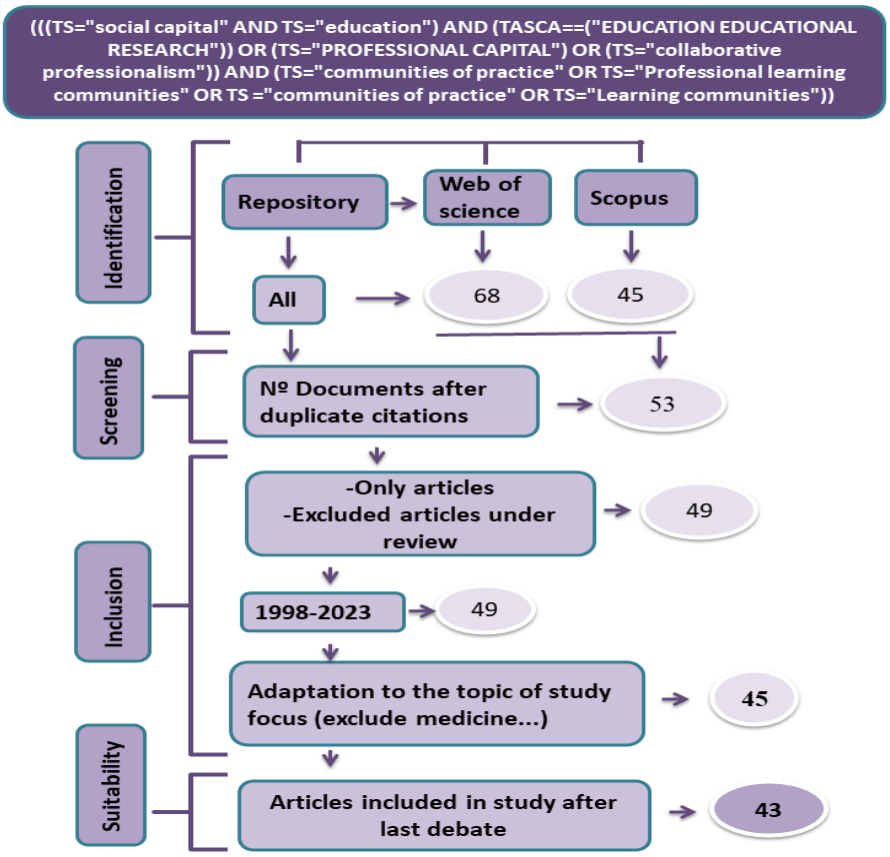
2) Identifying relevant studies: we searched Web of Science and Scopus (and complementary sources) using database-specific strings, limits by year and subject area, and March 2024 as the final search date.

For the scoping review, a set of key terms was integrated to form the search formula used across different searches: (((TS= "social capital" AND TS="education") AND (TASCA=("EDUCATION EDUCATIONAL RESEARCH"))) OR (TS="PROFESSIONAL CAPITAL") OR (TS="collaborative professionalism")) AND (TS="communities of practice" OR TS="Professional learning communities" OR TS="communities of practice" OR TS="Learning communities").

Furthermore, it investigated the period 1998 to 2023, the last 25 years from the work of Wenger (1997) Community of Practice and Sergiovanni (1998) social capital as it has evolved in recent years with the concept of professional capital (Hargreaves and Fullan, 2014). A total of 53 records were retrieved from the databases consulted. Duplicates and documents not related to professional learning communities were first removed, leaving 47 documents for title and abstract screening. After applying the inclusion and exclusion criteria to the full-text articles, the final number of studies included was 43. The detailed search process and the selection of studies included in the review are visually represented in Figure 1.

Figure 1.

Flow diagram of the review process



Source: Authors' own

3) Study selection: two reviewers independently screened titles, abstracts and, when necessary, full texts against predefined inclusion/exclusion criteria; disagreements were solved through discussion.

Once the terms used to search for articles were established, the search was further narrowed down by applying a set of criteria described in Table 1.

Table 1.

Inclusion and eligibility criteria

Inclusion Criteria	Description
Type of document	Original articles published in academic journals were included.
Year of publication	Articles published between 1998 and 2023 were considered.
Theme	Articles addressing professional learning communities, social

	and professional capital, and collaborative professionalism were included. Non-education texts were excluded.
Language	Articles written in English and Spanish were considered.
Accessibility	We selected articles accessed through the Web of Science and Scopus databases.

4) Charting the data: an extraction form was created (see Appendix) to record bibliographic data, context, PLC model, methods, and main findings.

5) Collating, summarising and reporting the results: The analysis process began with the application of the flow diagram of the review process, emerging categories or terms of analysis were defined collaboratively through reflective judgment among the authors of this study. These categories were then discussed with field experts to ensure precision and relevance. This collaborative approach was crucial for the successful execution of the study. Detailed information regarding the coding process and the resulting items can be found in the coding table, available in appendix.

Subsequently, in-depth reading identified the emerging themes and the directions of work on these issues. It identified six core ideas discussed and supported by the various works consulted and explored in this scoping review. These ideas include i) how communities are studied through various methodologies and data collection techniques, ii) the purposes and levels of community, iii) the types of leadership that contribute to educational improvement, iv) collaborative professionalism and the enhancement of professional capital, v) the use of information and communication technologies for community development, vi) social capital and organizational conditions for fostering community growth, and vii) the role of the community in the educational process. In the final step of the analysis process, the results were visualized using various graphical tools to represent the interactions and trends observed throughout the study.

12. Findings and Discussion of Results

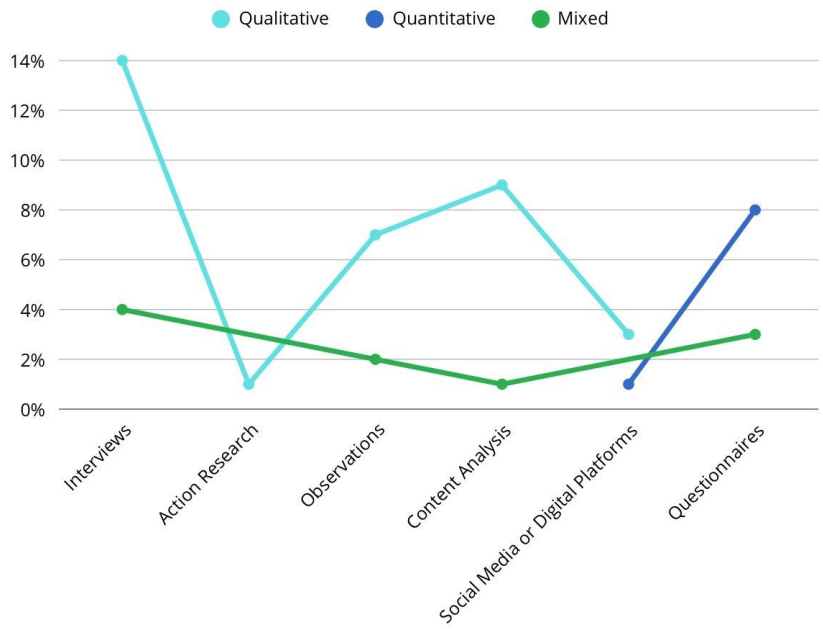
Considering the evolution of research methodologies and the data collection techniques used, Figure 2 illustrates a clear trend toward using qualitative methodologies in PLC and CpP studies. This trend has been particularly prominent in recent years, accounting

for almost 90% of the studies. While qualitative methods predominate, quantitative and mixed methods have also been utilized, albeit at lower percentages.

Similarly, when examining the techniques used for data collection reveals that qualitative methodologies — especially interviews — have been the most common approaches to gain an in-depth understanding of the functioning and development of PLCs and CpPs. According to (Anonymous, X; Miles & Huberman, 1994), interviews effectively capture the complexity of interactions and dynamics within communities, offering a richer and more detailed understanding. This preference for qualitative approaches enables a deeper exploration of the topic, contrasting with the more panoramic perspective provided by quantitative techniques. Recognizing the methodological aspects and approaches used to study PLCs and social capital helps inform which methodologies are most appropriate for effectively understanding and analyzing these research areas.

Figure 2.

Types of methodologies and tools used over time.

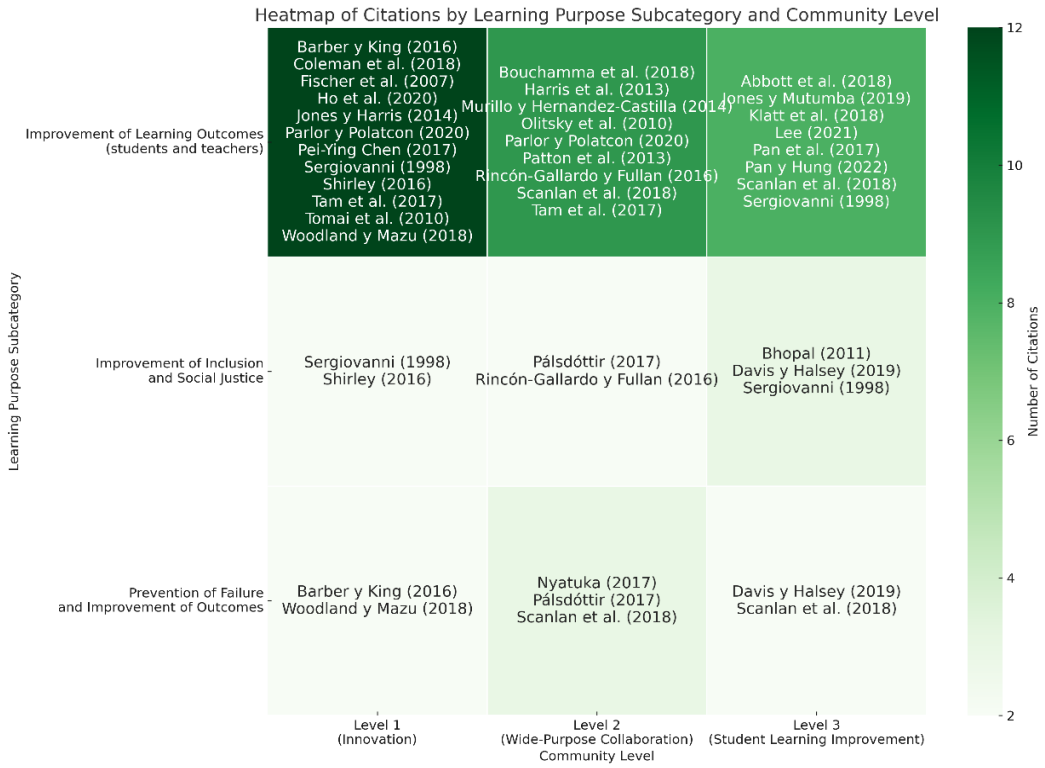


Source: Authors' own

Figure 3 shows a heat map across two categories—1) learning purposes and 2) community levels (according to Hargreaves & O'Connor, 2017). In order from top to bottom, we can observe a pattern in the distribution of articles. The subcategory *"improving learning outcomes"* (n=23) is the most frequently studied topic, followed by *inclusion* (n=6) and *prevention of school failure* (n=7). In contrast, the subcategory *"improvement of inclusion and social justice"* is featured in a significant number of articles at level 1 (n=17), followed by level 2 *collaboration* (n=16), and to a lesser extent, level 3 *improving student learning* (n=11).

Figure 3.

Heat Map: Learning Purposes vs. Community Levels



Source: Authors' own

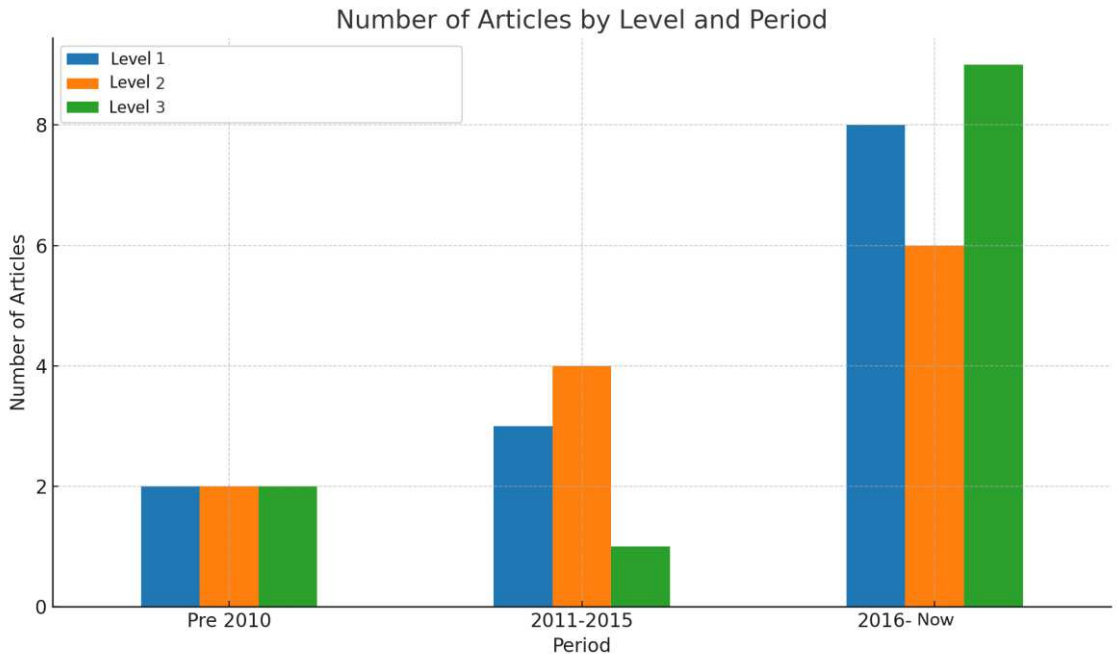
A predominance of research focused on improving learning outcomes through collaboration is evident, while studies on inclusion and social justice receive comparatively less attention. These areas, however, warrant further research (Bruk, 2017; Correnti, 2012; Forte, 2011; Koutsouris, 2019; Robinson, 1988). It is also significant to examine the complexities of inclusion and its impact on students,

underscoring its importance as a fundamental right and emphasizing the need for more studies on social justice and equity (Artiles, 2006; Blackman, 2019; Murphy, 2016).

In this context, Figure 4 provides a more detailed analysis of the distribution of articles according to level and time period. This figure highlights that Level 2 (training and collaboration) was predominant during 2011-2015, marking a crucial phase for collaborative efforts and training within PLCs. However, Level 3 (improvement of student learning) is now the most prominent, signaling a shift towards the practical application of strategies and the evaluation of their direct impact on student learning outcomes (Osterholt, 2010).

Figure 4.

Distribution of the number of articles according to level and time period



Source: Authors' own

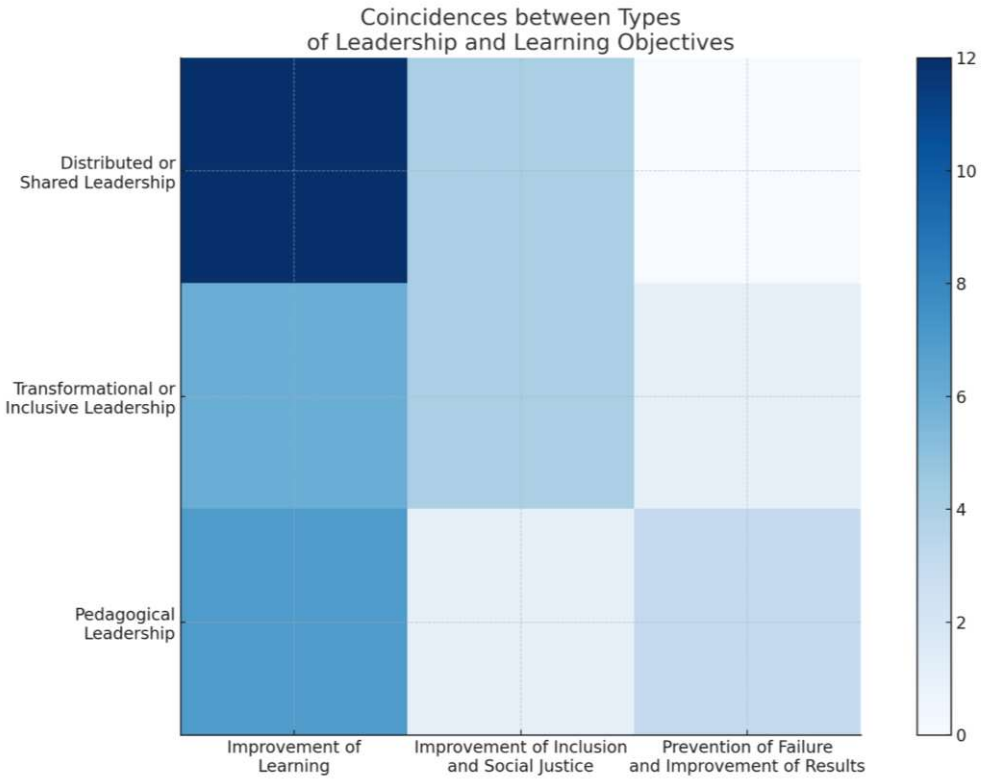
The main observations from Figures 3 and 4 can be summarized as follows: Figure 3 demonstrates a progressive evolution in focusing on 'improving learning outcomes' across the different levels. This suggests a growing emphasis on understanding and enhancing learning outcomes within PLCs. On the other hand, Graph 4 reveals a steady and significant increase in publications since 2016, with a recent shift towards the prominence of level three (improving learning outcomes). This shift indicates a

transition from an earlier focus on collaboration and training towards a more direct examination of the impact on learning outcomes (Hargreaves & O'Connor, 2017).

Figure 5 shows that various types of leadership—distributed, shared, transformational, inclusive, and pedagogical—are closely linked with schools functioning as PLCs or CpPs. These leadership models significantly influence educational outcomes, foster inclusive cultures, promote social justice, and prevent school failure. This analysis allows for these elements to be viewed more clearly, as shown below:

Figure 5.

Types of leadership and learning improvement



Source: Authors' own

The heat map — which visualizes the relationships between distributed, transformational/inclusive, and pedagogical leadership types and learning improvement, inclusion, social justice, and school failure prevention — highlights significant findings. Distributed or shared leadership strongly impacts educational outcomes (Hargreaves & Ainscow, 2015; Rincón-Gallardo & Fullan, 2016). This type of leadership fosters collaboration, empowering non-managerial colleagues to

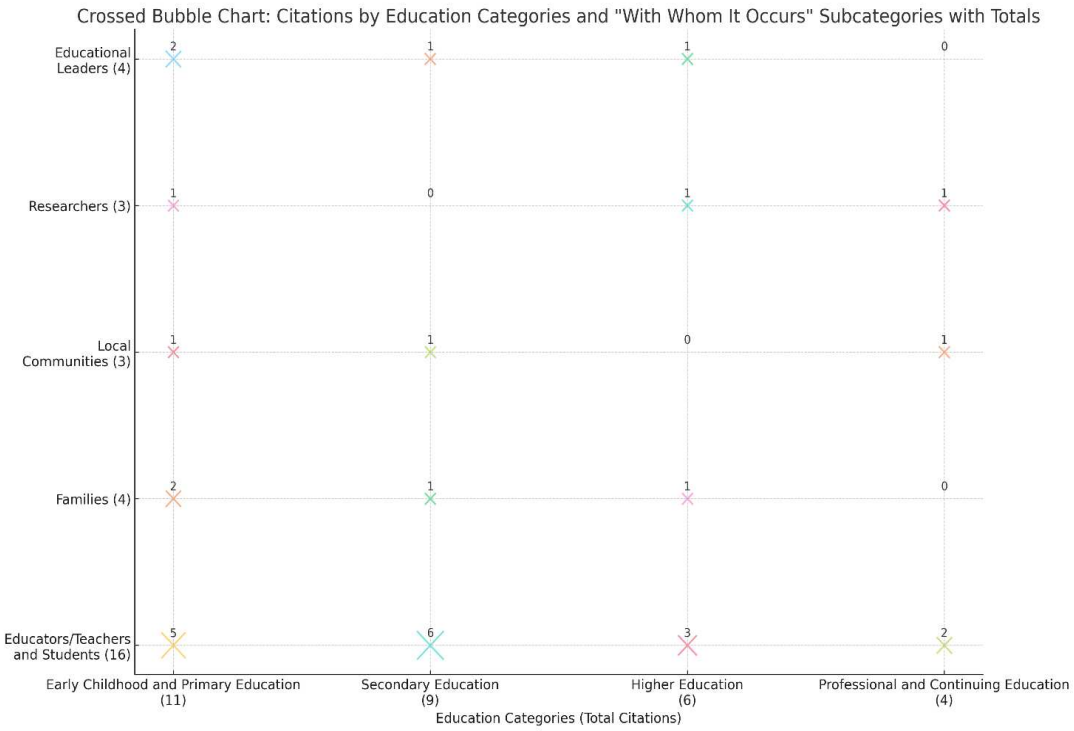
take on leadership roles. Pedagogical leadership contributes to learning improvement through personalized planning and collaborative relationships (Davies & Halsey, 2022), while transformational or inclusive leadership enhances results by addressing issues of marginalization and discrimination (Murillo & Hernández-Castilla, 2014).

Regarding inclusion and social justice, distributed and transformational leadership are particularly effective in promoting equity and encouraging reflection on the importance of education (Bhopal, 2011; Shirley, 2016). Pedagogical leadership is also crucial in preventing school failure, and it is supported by professional learning communities that promote student engagement in their learning processes (Barber & King, 2016; Crossley, 2015).

The bubble plot in Figure 6 offers two key insights. First, the citation frequencies are inversely proportional to the educational stage, suggesting that primary and secondary school communities are the most frequently studied in relation to this topic. Second, concerning themes, the majority of studies emphasize collaboration among teachers (16 articles), with fewer focusing on families (4) and communities (3). Interestingly, a small number of studies also examine the interactions between leaders (4). This analysis reveals 11 citations in early childhood and primary education and nine in secondary education, highlighting the prevalence of teacher-student interactions. In contrast, fewer publications focus on higher education, professional, and continuing education (6 and 4, respectively), indicating less research activity, although the research focus is similar to that found in secondary education.

Figure 6.

Interaction between stakeholders and educational levels



Interactions between teachers, students, and other educational actors vary across educational levels and influence the development of professional and social capital. In Early Childhood and Primary Education, collaboration among teachers, students, and families is essential for fostering the child's holistic development (Farell, 2003). In Secondary Education, while family involvement tends to decrease, there is an increase in student autonomy and peer support networks, which play a significant role in learning and social development (Stevens, 2007). In Higher Education, the focus shifts to professional capital and the cultivation of critical competencies that prepare students for their future careers (Braatz, 1996). To better connect learning with local realities, integrating students, community members, and industries into projects that bridge theory and practice is crucial (Watson, 2017).

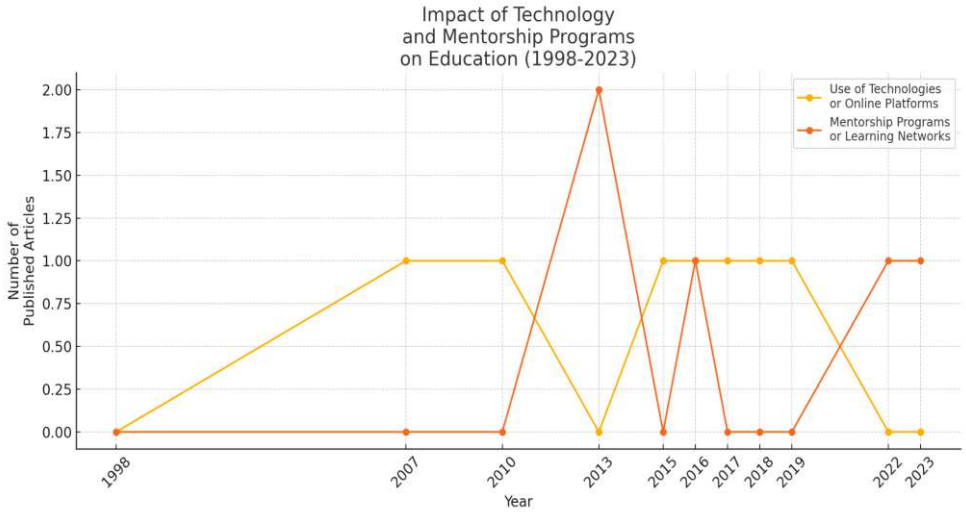
Information and communication technologies for community development

Figure 7 illustrates the impact of technology and mentoring programs in education from 1998 to 2023, as reflected in the scientific literature. There is a noticeable increase in publications concerned with the use of technologies and online platforms alongside mentoring programs and learning networks. The highest number of publications on mentoring programs emerged in 2013, with two articles published. Since 2016, the use of technologies has shown a relatively stable

trend with some fluctuations. However, there has been a recent rise in interest in mentoring programs, particularly in 2022 and 2023.

Figure 7.

Interaction patterns at educational levels



When analyzing the data, distinct patterns emerge for mentoring programs and technology. The increase in publications on mentoring programs in 2013 reflects an escalating demand for support within education, driven by a growing emphasis on soft skills and the importance of support networks. In contrast, the adoption of technology has remained stable since 2016, albeit with some fluctuations, possibly due to variability in implementation practices and the availability of resources. The recent surge in publications related to mentoring in 2022 and 2023 can likely be attributed to the COVID-19 pandemic, which underscored the importance of interpersonal support during remote learning. This period highlighted the positive effects that mentoring programs can have on student well-being and academic performance.

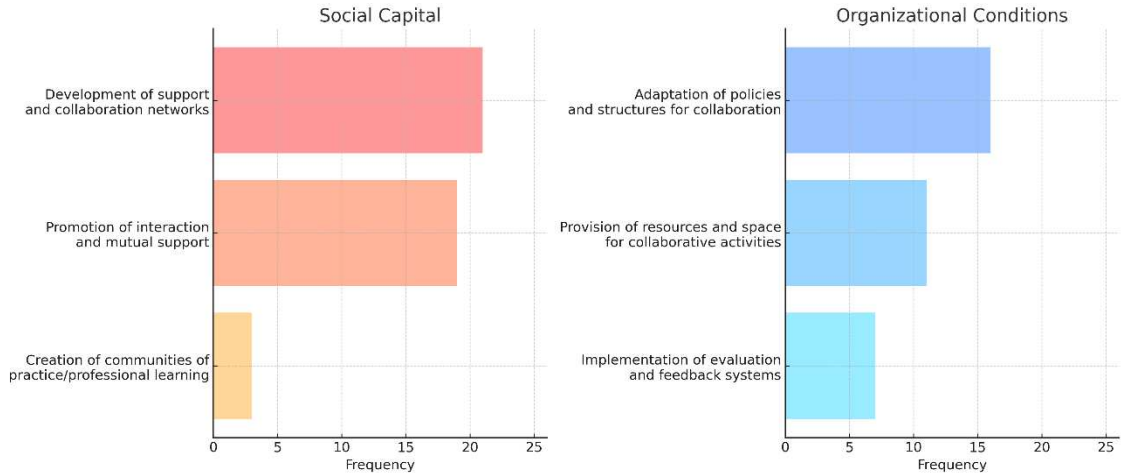
Figure 8 offers a comparative analysis of the frequency of elements and factors contributing to social capital and the organizational conditions within a school context.

In the social capital section, ‘developing supportive and collaborative networks’ is notable with the highest frequency (n=25), followed by ‘promoting interaction and mutual support’ (n=15), and, to a lesser extent, ‘creating communities’ *of* ‘practice/professional learning’ (n=5). These findings suggest a significant emphasis on building strong support networks and encouraging continuous participant interaction.

In terms of organizational conditions, ‘adapting policies and structures for collaboration’ (n=20) and ‘providing resources and space for collaborative activities’ (n=18) are the most frequently cited factors, highlighting a strong organizational commitment to fostering and supporting collaboration. Conversely, ‘implementation of evaluation and feedback systems’ appears less frequently (n=10), indicating a comparatively lower focus on this area.

Figure 8.

Frequency of articles on social capital and organizational conditions



Integrating social capital and organizational conditions is essential for fostering collaborative networks within educational institutions. Social capital enhances collaboration in PLCs by promoting joint activities and effective communication (Putilova, 2021). However, cultural and structural barriers can impede their growth and effectiveness (Murphy, 2015). Professional development within these communities is vital for enhancing instruction and learning (Supovitz, 2002). However, there is a need for more robust evaluation and feedback systems to support continuous improvement (Stelitano, 2018). Adequate organizational conditions, such as supportive policies and resources, are crucial for sustaining collaboration and driving long-term school improvements.

13. Conclusion

Research on PLCs has predominantly relied on qualitative methodologies to gain an in-depth understanding of these communities. However, of mixed methods has increased, coinciding with the introduction of the Sustainable Development Goals (SDGs). Interviews have emerged as the most commonly used data collection instrument, followed by questionnaires. This trend suggests that qualitative methodologies, particularly those utilizing interviews, are the most effective for exploring the detailed functioning of communities. In contrast, quantitative methodologies provide a broader, less detailed perspective.

On the other hand, community purposes and levels the results reveal a strong focus on improving learning outcomes through collaboration within PLCs, emphasizing their significant role in education. However, there is a notable gap in the attention directed to key areas such as inclusion and social justice, which are essential for addressing educational inequalities. This underrepresentation indicates a need for more comprehensive research, as equity and social justice are crucial for transformative education that benefits all students. The literature has evolved to show a shift towards practical assessments and direct improvement of student achievement, aligning with the demand for evidence-based educational practices. While this focus on outcomes is essential, it should complement, not replace, collaborative efforts. Integrating improved student outcomes with the promotion of inclusive education is necessary for sustainable progress. Future research should, therefore, strengthen the links between learning, equity, and social justice to ensure that advancements are equitable and inclusive.

Besides, distributed leadership emerges as the most effective approach for improving educational outcomes, as it encourages sharing leadership responsibilities among various stakeholders and fosters a collaborative culture. Pedagogical leadership is also critical, supporting effective learning by implementing personalized plans and building strong collaborative relationships between teachers and students. Transformational or inclusive leadership is essential for promoting social justice and inclusion, combating marginalization, and improving student learning outcomes. Additionally, pedagogical leadership not only contributes to academic success but is also a crucial element in preventing school failure, as it supports a holistic educational approach that meets the diverse needs of students.

As well, to a collaborative professionalism and increased professional capital, the educational stage shapes educational interactions within communities, and the significance of both professional and social capital in these interactions cannot be overstated. In early childhood and primary education, collaboration between teachers, students, and families is crucial for the holistic development of students, emphasizing the importance of professional and social networks that support learning and well-being. In Secondary Education, while family involvement tends to decrease, there is an increase in student autonomy and the development of peer support networks, which play a pivotal role in fostering student independence and resilience. In Higher and Continuing Education, the emphasis shifts towards building professional capital, focusing on developing critical competencies that enhance students' expertise and readiness for complex challenges. Despite these strides, there is a need for further growth in PLCs to move beyond teacher-to-teacher interactions and integrate broader community engagement.

To achieve this, it is essential to include a wider range of community actors and professionals outside the school environment. Strengthening professional capital around shared goals and purposes can foster a deeper, more inclusive educational approach. According to UNESCO (2021), creating inclusive and transformative education practices involves expanding the scope of schools and professional learning communities (PLCs) to collaborate with all educational stakeholders, including families, local organizations, and other professionals. This approach ensures that the educational community works collectively towards common goals, thereby enhancing equitable, quality education that can effectively address contemporary societal challenges.

Simultaneously, information and communication technologies for community development shows, the growth of mentoring technologies and programs in education from 1998 to 2023 illustrates how educational systems have adapted to the evolving demands of modern learning environments. The peak in publications related to mentoring in 2013 highlights an increasing recognition of the importance of personalized support, particularly in developing soft skills and creating supportive networks for students. This period marked a significant shift towards understanding the value of mentorship in fostering individual growth and resilience. Since 2016, the continued presence and stability of technology integration in educational practices indicate that while these tools have become a staple in teaching and learning, there are

ongoing challenges with achieving consistent and effective implementation. The recent increase in research output on mentoring programs in 2022 and 2023 suggests that the COVID-19 pandemic has amplified the need for interpersonal connections and robust support systems in remote and hybrid educational environments. This trend emphasizes the critical role that mentoring plays in maintaining student engagement, well-being, and overall success when traditional face-to-face interactions are limited. These findings suggest that technology and mentoring are central to facilitating student adaptation and resilience in an increasingly complex educational context.

Finally, the integration and interaction of social capital and organizational conditions are crucial for creating effective collaborative networks within educational institutions. PLCs serve as key facilitators in developing social capital, enhancing the collaborative efforts essential for educational improvement. Key components supporting social capital growth include collective activity, effective communication, and the strategic use of social networks to strengthen connectivity among educators and students. Additionally, fostering supportive relationships and incorporating student voices into educational processes are vital aspects that further enhance social capital. Creating communities of practice plays a significant role in instructional improvement and contributes to professional development. However, it is important to recognize that cultural and structural barriers can impede the growth and effectiveness of these communities. To overcome such challenges, professional development initiatives must actively position teachers within communities of practice and prioritize enhancing evaluation and feedback systems, an area identified as urgently needing progress.

These findings emphasize the critical role of social capital and organizational structures in supporting educational advancement. Figure 9 effectively summarizes and visualizes the key insights and most significant issues highlighted in this study.

Figure 9.

Conclusions, findings, and significant issues



Source: Authors' own

The findings of this study underscore a significant emphasis on the professional relationships between teachers, while interactions involving other key actors in the educational context remain insufficiently explored. To create a more inclusive and comprehensive professional capital, it will be essential to align with UNESCO's (2021) vision of shared governance and collaborative rethinking of education. Establishing a shared purpose among all educational actors and promoting a collaborative decision-making process, termed "decisional capital," will be essential for implementing effective educational practices. This broader approach is vital for achieving educational outcomes that are both effective and equitable.

Future research should explore how democratic governance and social engagement contribute to the success of PLCs. This entails incorporating social and democratic dimensions into analyses, ensuring that the research extends beyond technical considerations to include the human and social aspects. Interpersonal relationships and collaboration are fundamental to the success of PLCs in fostering just and participatory educational environments.

Future strategies should prioritize inclusion and community collaboration, which means developing methods that integrate all educational stakeholders equitably. Research should explore strategies for building and maintaining a shared purpose, strengthening

community cohesion, and enhancing its adaptability to contemporary educational challenges.

Lastly, implementing continuous evaluation systems will be critical for real-time adjustments to educational practices, allowing PLCs to evolve adaptively. This approach will ensure sustained improvements in their operations and a more profound impact on educational outcomes, fostering a shift toward a more holistic and transformative understanding of the educational process.

Declarations

Acknowledgments: This work does not present acknowledgments

Conflict of interest: This work has no conflicts of interest

Ethics, Consent to Participate, and Consent to Publish declarations: not applicable.

Funding: This work was supported by the predoctoral contract grant PRE2021-098075, associated with project PID2020-117020GB-I00, funded by MCIN/AEI/10.13039/501100011033, and by project B-SEJ-234-UGR20, funded by the Consejería de Universidad, Investigación e Innovación of the Junta de Andalucía and the European Regional Development Fund (ERDF).

Data Availability: Not Applicable.

Bibliographic References

Ainscow, M. (2016). *Struggles for equity in education.* Routledge.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Azorín, C., Harris, A. & Jones, M. (2022). Liderazgo distribuido y trabajo en red: la evidencia. In A. Bolívar., G. Muñoz., J. Weinstein and J. Domingo (Eds.), *Liderazgo educativo en tiempos de crisis: aprendizajes para la escuela post-covid* (pp. 131- 148). Universidad de Granada.

Baker, T. & Beames, S. (2016). Good CoP: what makes a community of practice successful?. *Journal of Learning Design, 9* (1), 72-79. http://dx.doi.org/10.5204/jld.v9i1.234

Barber, W. & King, S. (2016). Teacher-student perspectives of invisible pedagogy: new directions in online problema-bases learning environments. *The Electronic Journal of e-Learning, 14* (4), 235-243

Bermejo, N. S. (2019). *Ejercicio para la construcción de un estado del arte en el área educativa.* Universidad de Oriente.

Bogenrieder, I. & Nooteboom, B. (2004). The Emergence of Learning Communities: A Theoretical Analysis. In H. Tsoukas and N. Mylonopoulos (Eds.), *Organizations as Knowledge Systems* (pp. 46-66). Palgrave Macmillan UK.

Bolam, R., McMahon, A., Stoll, L., Thomas, S. & Wallace, M. (2005). *Creating and sustaining effective professional learning communities. DfES Research Report RR637*. University of Bristol.

Bolívar, A. (2019). Spanish framework for school leadership and professional identity: Context, development, and implications. *Educational Policy Analytic Archives*, *27* (114). https://doi.org/10.14507/epaa.27.4544

Bolívar, A. (2020). Otra gobernanza para dinamizar la organización de los centros. In M. Fernández Enguita (Eds.), *La Organización Escolar. Repensando la caja negra para poder salir de ella* (pp. 37-47). ANELE-REDE.

Bolívar, A. & Domingo, J. (2024). *Comunidades de práctica profesional y mejora de los aprendizajes.* Graó

Bridwell-Mitchell, E.N. (2017). Them that's got: how tie formation in partnership networks gives high schools differential access to social capital. *Organization Science, 25* (2) 1221-1255. https://doi.org/10.3102/0002831217717815

Canuto, M. A. (2012). *Archaelogy of communities: a new world perspective.* Routledge

Coleman, J. S. (1990). *Foundations of social theory*. Belknap Press of Harvard University Press.

Colmenero Ruíz, M. J. (2015). Caminando hacía una educación inclusiva. Caminando hacía una sociedad inclusiva. *Iniciación a la investigación, 6*, 1- 18.

Correnti, R. & Martinez, J. F. (2012). Conceptual, Methodological, and Policy Issues in the Study of Teaching: Implications for Improving Instructional Practice at Scale. *Educational Assessment, 17*(2-3), 51-61.

Crossley, D. (2015). An education woth having: the aspirations and the development of the whole education network in England. *European Journal of Education, 50* (2), 185-195. https://www.jstor.org/stable/26609267

David, J. & Halsey, J. (2019). Principals as protagonists: practices beneficent for indigenous education in rural schools. Austral*ian and International Journal of Rural Education, 29* (1), 101- 118. https://doi.org/10.47381/aijre.v29i1.190

De Jong, L., Wilderjans, T., Meirink, J., Schenke, W., Sligte, H. & Admiral, W. (2021). Teachers' perceptions of their schools changing toward professional learning communities. *Journal of Professional Capital and Community, 6* (4), 336-353. http://dx.doi.org/10.1108/JPCC-07-2020-0051

Dias, S. B., Hadjileontiadou, S. J., Diniz, J. A. & Hadjileontiadis, L. J. (2017). Computer-based concept mapping combined with learning management system use: An explorative study under the self- and collaborative-mode. *Computers & Education, 107*, 127-146. https://doi.org/10.1016/j.compedu.2017.01.009

Domínguez, M. (2016). Estrategias comunitarias para la inclusión social. *Revista Internacional de Inclusión Social*, *18*(1), 23-34.

DuFour, R. (2004). What is a professional learning community? *Educational Leadership, 61* (8), 6-11.

DuFour, R. & Eaker, R. (2008). *Revisiting professional learning communities at work*. Solution Tree Press

Falk, B. (2014). Early Career Teachers: Possibilities for Professional Learning. *The New Educator, 10*(3), 163-165.

Forte, A. & Flores, M. A. (2011). Aprendizagem e Colaboraçao: Reflexoes Sobre um Projeto de Intervençao/Formaçao. *Revista Portuguesa de Pedagogia*, 93-131.

Fujimoto, T. (2014). Organizaciones comunitarias y su impacto en la inclusión. *Journal of Community Development, 21*(2), 112-128. https://doi.org/10.1111/1467-8551.12034

Fullan, M. (2014). Implementation: Amplify change with professional capital. *The Learning Professional*, *37* (1), 44.

Good, J. & Bennett, J. (2005). A Community of First-Year Teachers: Collaboration Between Higher Education and Public Schools to Improve Teacher Retention. *The New Educator, 1*(1), 45-54.

Grifftihs, M. (2003). *Action for social justice in education: fairly different.* Open University Press

Grupta, N. (2016). Competencias cívicas en el contexto de las CPA. *International Review of Education*, *62*(1), 67-85.

Hargreaves, A. & Ainscow, M. (2015). The top and bottom of leadership and change. *Phi Delta Kappan, 97* (3), 42-48.

Hargreaves, A. & O'Connor, M.T. (2018). *Collaborative professionalism: When teaching together means learning for all.* Corwin.

Hargreaves, A. & Fullan, M. (2020). Professional capital after the pandemic: Revisiting and revising classic understandings of teachers' work. *Journal of Professional Capital and Community, 5* (3/4), 327-336. http://dx.doi.org/10.1108/JPCC-06-2020-0039

Hart, K. (2011). TIC y la expansión de comunidades de aprendizaje. *Journal of Educational Technology*, *19*(4), 213-226

Ibarra, P. (2011). *Democracia relacional.* Centro de Estudios Políticos y Constitucionales.

Kennedy, A. (2016). Professional learning in and for communities: Seeking alternatives discourses. *Professional Development in Education, 42*(5), 667-670.

Kitchenham, B. & Charters, S. (2007). Guidelines for performing systematic literature reviews in software engineering. *Technical report, EBSE Technical Report EBSE-2007-01*.

Koutsouris, G., Anglin-Jaffe, H. & Stentiford, L. (2019). How well do we understand social inclusion in education? *British Journal of Educational Studies, 68*(2), 179-196. https://doi.org/10.1080/00071005.2019.1658861

Kwak, Y. (2015). An Exploration of Developmental Stages of Teacher Learning Community. *Journal of Curriculum and Evaluation, 18*(2), 83-104.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5, 69. https://doi.org/10.1186/1748-5908-5-69

Leithwood, K., Harris, A. & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management, 40* (1), 5-22. https://doi.org/10.1080/13632434.2019.1596077

Liberati, A., Altman, D., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J., Clarke, M., Devereaux, P., Kleijnen, J. & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: Explanation and elaboration. *BMJ*, *339*, 27-34. https://doi.org/10.1136/ bmj.b2700

Louis, K. S. & Murphy, J. (2017). Trust, caring and organizational learning: the leader's role. *Journal of educational administration, 55* (1), 103-126.

Mazmanina, P. E., Rawls, M. W. & Stinger, J. K. (2020). Assessment and evaluation in continuing professional education. In L. H. Hill (Eds.), *Assessment evaluation and accountability in adult education* (pp. 86-109). Routledge

Mercieca, B. (2016). What Is a Community of Practice? In J. McDonald and A. Cater-Steel (Eds.), *Communities of Practice* (pp. 3-25). Springer.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook* (2nd ed.). SAGE Publications.

Osterholt, D. A. & Barratt, K. (2010). Ideas for Practice: A Collaborative Look to the Classroom. *Journal of developmental education, 34* (2), 1-7.

Parlar, H., Polatcan, M. & Cansoy, R. (2019). The relationship between social capital and innovativeness climate in schools: the intermediary role of professional learning communities. *International Journal of Educational Management, 34* (2), 232-244. https://doi.org/10.1108/IJEM-10-2018-0322

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. JBI Evidence Synthesis, 18(10), 2119–2126. https://doi.org/10.11124/JBIES-20-00167

Pollock, A. & Berge, E. (2017). How to do a systematic review. *International Journal of Stroke*, *13*(2), 138-156. https://doi.org/10.1177/1747493017743796

Quinn, J. (2010). *Learning communities and imagined social capital.* Continuum

Rincón, S. & Fullan, M. (2016). Essential features of effective networks in education. *Journal of Professional Capital and Community, 1* (1), 5-22. http://dx.doi.org/10.1108/JPCC-09-2015-0007.

Robinson, C. M. (1988). Improving Education Through the Application of Measurement and Research: A Practitioner's Perspective. *Applied Measurement in Education, 1*(1), 53-65.

Robinson, H., Kilgore, W. & Bozkurt, A. (2021). Learning Communities. In G. Durak and S. Çankaya (Eds.), *Research Anthology on Facilitating New Educational Practices Through Communities of Learning* (pp. 347-365). IGI Global.

Sergiovanni, J. (1998). Leadership as pedagogy, capital development and school effectiveness, *International Journal of Leadership in Education: Theory and Practice,* 1 (1), 37-46 http://dx.doi.org/10.1080/1360312980010104

Schechter, C. (2013). Collective learning in schools: exploring the perceptions of leadership trainees. *International Journal of Educational Management, 27* (3), 273-291.

Schnabel, P. (2016). Desarrollo académico y cívico en comunidades profesionales de aprendizaje. *Educational Leadership*, *33*(2), 91-104.

Shirley, D. (2016). Three forms of professional capital: systematic, social movement, and activist. *Journal of Professional Capital and Community, 1* (4), 302-320. https://doi.org/10.1108/JPCC-08-2016-0020

Star, S. (2014). Colaboración entre escuela y comunidad en la era digital. *Journal of Community Engagement*, *15*(3), 87-99.

Stelitano, L. (2018). *Collaborating for Educational Improvement: Exploring cases of teacher collaboration for policy implementation.* PEN.

Stevens, P., Lupton, R., Mujtaba, T. & Feinstein, L. (2007). *The development and impact of young people's social capital in secondary schools.* PEN.

Stoll, L., Bolam, R., Mcmahon, A. & Thomas, S. M. (2006). Professional Learning Communities: a review of the literatura. *Journal of Educational Change, 7* (4), 221-258. https://doi.org/10.1007/s10833-006-0001-8

Stoll, L. & Louis, K. S. (2007). Professional learning communities: Elaborating new approaches. In L. Stoll and K. S. Louis (Eds.), *Professional learning communities: Divergence, depth, and dilemmas* (pp. 1-13). Open University Press.

Stoll, L. (2010). Connecting learning communities: capacity building for systemic change. In A. Hargreaves, A. Lieberman, M. Fullan, and D. Hopkins (Eds.), *Second Internacional Handbook of Educational Change* (pp. 23- 35). Springer

Studans, L. (2003). *Developing Learning Communities in the First Years of School*. PEN.

Taib, A. & Holden, J. (2013). 'Third generation' conversations – A partnership approach to embedding research and learning skills development in the first

year. A Practice Report. *The International Journal of the First Year in Higher Education, 4*(2).

Tebes, J., Thai, N. D. & Matlin, S. L. (2014). 21st century science as a relational process: from Eureka, to team science and a place for community psychology. *Journal Community Psychological, 53*, 475-490 http://doi.org/10.1007/s10464-014-9625-7

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473. https://doi.org/10.7326/M18-0850

Tucker, J. S., Pollard, M. S., & Green, Jr., H. D. (2021). Associations of social capital with binge drinking in a national sample of adults: The importance of neighborhoods and networks. *Health and Place, 69*. https://doi.org/10.1016/j.healthplace.2021.102545

UNESCO (2016). Educación 2030. *Declaración de Incheon y Marco de Acción. Hacía una educación inclusiva y equitativa de calidad y un aprendizaje a lo largo de la vida para todos.* Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. Ecuador.

UNESCO (2021). *Reimagining our futures together: A new social contract for education. Report from the International Commission on the Futures of Education*. UNESCO.

Uzunboylu, H. (2012). Aprendizaje colaborativo en comunidades de práctica. *Journal of Collaborative Learning*, *13*(1), 65-79.

Valls, R. (2000). *Comunidades de aprendizaje: una práctica educativa de aprendizaje dialógico para la sociedad de la información.* [Tesis doctoral, Universitat de Barcelona]. Dipòsit Digital. https://diposit.ub.edu/dspace/handle/2445/43073

Watson, C., Wilson, A., Drew, V. & Thompson, T. L. (2017). Small data, online learning and assessment practices in higher education: A case study of failure?

Assessment and Evaluation in Higher Education, 42(7), 1030-1045. https://doi.org/10.1080/02602938.2016.1223834

Wenger, E. (2001). *Comunidades de práctica: aprendizaje, significado e identidad.* Paidós

Wenger, E. (2011). *Communities of practice: learning, meaning and identity.* Cambridge Universiry Press

Wenger, E. (2000). Communities of practice: The key to Knowledge Strategy, Knowledge Directions. *The Journal of the Institute for Knowledge Management, 1,* 48-93.

Woodland, R. & Mazur, R. (2019). Ampliando el aprendizaje colaborativo mediante TIC. *International Journal of Educational Innovation, 11*(1), 56-73.

Yancey, M. (2003). Estilos de vida saludables y su relación con la inclusión educativa. *Health and Education Review*, *12*(3), 59-72.

Yarskaya-Smirnova, E. (2015). Desigualdad y exclusión en contextos educativos. *Journal of Social Policy*, *24*(3), 112-128.

Appendix

Coding table

Dimension	Nº	Cites
1. Purposes related to learning products		

1.1. Improving learning (students and teacher)	23	Abbott et al. (2018), Klatt et al. (2018), Bouchamma et al. (2018), Coleman et al. (2018), Pei-Ying Chen (2017), Pan et al. (2017), Sergiovanni (1998), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Barber y King (2016), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Patton et al. (2013), Harris et al. (2013), Rincón-Gallardo y Fullan (2016), Shirley (2016), Tam et al., (2017) Jones y Mutumba (2019), Parlor y Polatcon (2020), Scanlan et al., (2018), Woodland y Mazu (2018), Ho et al., (2020), Pan y Hung (2022), Lee (2021),
1.2. Improving inclusion and social justice	6	Pálsdóttir (2017), Bhopal (2011), Shirley (2016), Rincón- Gallardo y Fullan (2016), Sergiovanni (1998), Davis y Halsey (2019),
1.3 Preventing failure and improving results	7	Nyatuka (2017), Pálsdóttir (2017), Barber y King (2016), Brouwer y Jansen (2019), Scanlan et al., (2018), Woodland y Mazu (2018), Davis y Halsey (2019),
2. How is, where, in which it occurs, with whom, for what…?		
2.1. Where and how collaboration occurs		
2.1.1. Where		
Early childhood education and primary education	9	Sergiovanni (1998), Pálsdóttir (2017), Nyatuka (2017) Lin Lee y On Lee (2018), Tam et al., (2017), Jones y Mutumba (2019), Parlor y Polatcon (2020), Woodland y Mazu (2018), Davis y Halsey (2019), Keung y Cheung (2023),
Secondary education	9	Abbott et al. (2018), Klatt et al. (2018), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Lee y Lee (2018), Parlor y Polatcon (2020), Davis y Halsey (2019),
Higher education	7	Pei-Ying Chen (2017), Pan et al. (2017), Barber y King (2016), Crossley (2015), Brouwer y Jansen (2019), Zhou et al., (2022), Keung y Cheung (2023),
Professional and continuing education	5	Bouchamma et al. (2018), Coleman et al. (2018), Patton et al. (2013), Harris et al. (2013), Bruin et al., (2023),
2.1.2. How?		
Use of technologies or online platforms	7	Coleman et al. (2018), Fischer et al. (2007), Tomai et al. (2010), Crossley (2015), Barber y King (2016), Tam et al.,

		(2017), Pimmer et al., (2019)
Involves specific activities such as mentoring programs or learning networks	7	Patton et al. (2013), Harris et al. (2013), Pálsdóttir (2017), Rincón-Gallardo y Fullan (2016), Scanlan et al., (2018), Zhou et al., (2022), Ko (2023)
2.2. Who is it produced with?		
Involves teacher and students	31	Abbott et al. (2018), Klatt et al. (2018), Bouchamma et al. (2018), Coleman et al. (2018), Pei-Ying Chen (2017), Pan et al. (2017), Sergiovanni (1998), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Barber y King (2016), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Patton et al. (2013), Harris et al. (2013) y Rincón-Gallardo y Fullan (2016), Lee y Lee (2018), Tam et al., (2017), Jones y Mutumba (2019), Pimmer et al., (2019), Scalan et al., (2018), Woodland y Mazu (2018), Ho et al., (2020), Bouchamma et a., (2021), Pan y Hung (2022), Lee (2021), Zhou et al., (2022), Bruin et al., (2023), Fjeld y Spernes (2023), Keung y Cheung (2023), Ko (2023)
Dimension	**Nº**	**Cites**
1. Purposes related to learning products		
1.1. Improving learning (students and teacher)	23	Abbott et al. (2018), Klatt et al. (2018), Bouchamma et al. (2018), Coleman et al. (2018), Pei-Ying Chen (2017), Pan et al. (2017), Sergiovanni (1998), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Barber y King (2016), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Patton et al. (2013), Harris et al. (2013), Rincón-Gallardo y Fullan (2016), Shirley (2016), Tam et al., (2017) Jones y Mutumba (2019), Parlor y Polatcon (2020), Scanlan et al., (2018), Woodland y Mazu (2018), Ho et al., (2020), Pan y Hung (2022), Lee (2021),
1.2. Improving inclusion and social justice	6	Pálsdóttir (2017), Bhopal (2011), Shirley (2016), Rincón- Gallardo y Fullan (2016), Sergiovanni (1998), Davis y Halsey (2019),
1.3 Preventing failure and improving results	7	Nyatuka (2017), Pálsdóttir (2017), Barber y King (2016), Brouwer y Jansen (2019), Scanlan et al., (2018), Woodland y Mazu (2018), Davis y Halsey (2019),
2. How is, where, in which it occurs, with whom, for		

what…?		
2.1. Where and how collaboration occurs		
2.1.1. Where		
Early childhood education and primary education	9	Sergiovanni (1998), Pálsdóttir (2017), Nyatuka (2017) Lin Lee y On Lee (2018), Tam et al., (2017), Jones y Mutumba (2019), Parlor y Polatcon (2020), Woodland y Mazu (2018), Davis y Halsey (2019), Keung y Cheung (2023),
Secondary education	9	Abbott et al. (2018), Klatt et al. (2018), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Lee y Lee (2018), Parlor y Polatcon (2020), Davis y Halsey (2019),
Higher education	7	Pei-Ying Chen (2017), Pan et al. (2017), Barber y King (2016), Crossley (2015), Brouwer y Jansen (2019), Zhou et al., (2022), Keung y Cheung (2023),
Professional and continuing education	5	Bouchamma et al. (2018), Coleman et al. (2018), Patton et al. (2013), Harris et al. (2013), Bruin et al., (2023),
2.1.2. How?		
Use of technologies or online platforms	7	Coleman et al. (2018), Fischer et al. (2007), Tomai et al. (2010), Crossley (2015), Barber y King (2016), Tam et al., (2017), Pimmer et al., (2019)
Involves specific activities such as mentoring programs or learning networks	7	Patton et al. (2013), Harris et al. (2013), Pálsdóttir (2017), Rincón-Gallardo y Fullan (2016), Scanlan et al., (2018), Zhou et al., (2022), Ko (2023)
2.2. Who is it produced with?		
Involves teacher and students	31	Abbott et al. (2018), Klatt et al. (2018), Bouchamma et al. (2018), Coleman et al. (2018), Pei-Ying Chen (2017), Pan et al. (2017), Sergiovanni (1998), Tomai et al. (2010), Olitsky et al. (2010), Fischer et al. (2007), Barber y King (2016), Jones y Harris (2014), Murillo y Hernandez-Castilla (2014), Patton et al. (2013), Harris et al. (2013) y Rincón-Gallardo y Fullan (2016), Lee y Lee (2018), Tam et al., (2017), Jones y Mutumba (2019), Pimmer et al., (2019), Scalan et al., (2018), Woodland y Mazu (2018), Ho et al., (2020), Bouchamma et a., (2021), Pan y Hung (2022), Lee (2021), Zhou et al., (2022), Bruin et al., (2023), Fjeld y Spernes (2023), Keung y

		Cheung (2023), Ko (2023)