A Review on the Empirical Research of PLCs in the Global South:

Evidence and Recommendations

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Executive Summary

This report presents a systematic review of 70 empirical articles relevant to professional learning communities (PLCs) in the Global South. It discusses definitions and outlines the evidence base concerning initiation, impact, and conditions for PLCs.

PLCs are conceptualised as a network, a space, an approach and a process. PLCs could be initiated as a result of a mandate, a project of professional development, or needs for mutual support of small groups of teachers.

The evidence highlights the positive impacts of PLCs on supporting teachers' collaborative learning, development of teaching efficacy, innovative changes, and trusting relationships in schools. The review also found a range of evidence on the conditions for development, implementation, and sustainability of PLCs. These conditions include strong leadership support, readiness of infrastructure, focus on learning and teaching, and quality of trusting relationships.

Recommendations

- Stronger leadership and policy support at the school and system levels are needed to develop and sustain PLCs within and across schools in the Global South.
- Structuring time for participation in PLCs within teachers' core workload would help to sustain their engagement in collaborative professional learning linked with PLCs.
- The vision, goals and agenda of PLCs should focus on enhanced learning and teaching and be communicated clearly with the members.
- Stronger support from the policy, leadership and research are needed to explore and promote the roles of PLCs in advancing the agenda for equitable and inclusive education.

- Rigorous research to theorise the tensions and challenges of teachers and school leaders in participating in PLCs would be useful in providing the leadership and policy with systematic insights into supporting PLCs effectively.

- Explicit incorporation of leadership for teacher professional development into programmes of school leadership preparation and development is central in developing effective leaders for PLCs.

- Developing and supporting PLCs for school leaders is essential in complementing formal programmes of leadership preparation and development in growing effective leaders for professional development.

- Developing a context-sensitive, evidence-based evaluation framework is essential in supporting developmental evaluation of programmes within and across PLCs over time.

- Rigorous research is needed to evaluate the cost effectiveness of PLCs, as compared with the other models of professional development.

- Future research should explore, in depth, as to how forms / models of professional development, including PLCs, could be developed to effectively complement each other in developing teachers and school leaders.

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1. Introduction

This report presents a systematic review of empirical research on professional learning communities (PLCs) in the Global South. It discusses definitions and outlines evidence concerning initiation, impact, and conditions for PLCs.

Professional development is central to improving learning and teaching in schools (Darling-Hammon et al., 2017; Opfer & Pedder, 2011; Shirrell et al., 2019). Professional learning communities (PLCs) have been advocated as one of the crucial forms of continuing professional development (Sims et al., 2021). PLC is defined as "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). This widely-cited, comprehensive definition highlights collaboration, sustained learning, and reflection as hallmarks associated with PLCs.

Formal research linked with PLCs emerged in the 1980s (Stoll et al., 2006). Two important reviews (Stoll et al., 2006; Vescio et al., 2008) were conducted to synthesise the body of literature on PLCs from the 1980s to the early 2000s. These two reviews provide insights into the nature and implementation of PLCs, though these insights are mainly based on the research in the United States and some other countries or nations in the Western world (e.g., England).

As a continuity of Stoll et al. (2006) and Vescio et al. (2008), a few reviews relevant to PLCs have been published recently (e.g., Dogan et al., 2016). However, these review articles are either confined to the research of PLCs in a single country (e.g., China (Qiao et al., 2018); South Korea (Lee & Kim, 2016)) or address a single aspect of PLCs (Dogan et al., 2016). There are no systematic reviews on PLCs in the Global South found in the literature till the present. For the

purpose of this review, Global South refers to the low- and middle-income countries in the regions of Latin America, Asia, Africa, and Oceania (Dados & Connell, 2012, available on this link).

The current systematic review of the research on PLCs in the Global South is timely and significant for two main reasons. Firstly, a rapid scan of the contemporary literature shows an emerging body of research on PLCs in the Global South published after the early 2000s. It is timely to uncover and synthesise evidence on key aspects (e.g., implementation and sustainability) of PLCs in these contexts of Global South.

This review is significant in building up a robust evidence base to inform development, improvement and sustainability of PLCs as a model of professional development in the Global South. Working towards achievement of SDG4 (Sustainable Development Goal 4) is an important pathway to supporting development and social equity of low-and-middle-income countries. SDG4 aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (*see* United Nations). Developing effective teachers and school leaders plays a critical role in improving inclusive and equitable quality education, given its positive effects on learning and teaching (Opfer & Pedder, 2011; Shirrell et al., 2019; Sims et al., 2021). Non-profit organisations (e.g., VVOB Belgium) are key players in supporting continuing professional development for teachers and school leaders in the Global South. This review provides contemporary, evidence-based insights to inform research, policy and practice for developing PLCs in and across schools in the Global South.

The current report outlines emerging evidence from our review of the empirical research on PLCs in the Global South to discuss the following questions.

1. How are PLCs defined?

2. How and by whom are PLCs initiated?

3. What are the impacts of PLCs on professional development for teachers and school leaders?

4. What are the conditions for initiating, implementing and sustaining PLCs?

The subsequent part of this report presents the review process of searching for and synthesising evidence from empirical articles on PLCs in the Global South.

2. Review process

The current review analyses 70 published journal articles concerning professional learning community (PLC) in the period from January 2000 to May 2021. Seven main inclusion criteria were formulated to guide the process of shortlisting publications for review. These criteria are presented in Table 1. The review process involved five iterative stages as outlined in Figure 1.

Table 1. Inclusion Criteria for the current Review

Inclusion criteria	Elaboration of Criteria
1. Time frame	This review shortlisted articles published between January 2000 and May 2021.
2. Language	This review focused on articles in English.
3. Geographical locus	This review centred on articles drawn from research undertaken in countries in the Global South. The list of these countries was taken from the OECD website *(see this link)*.
4. Type of research	This review considered empirical articles. An empirical article uses empirical data and provides a description of methods of data collection and analysis.

We initially took an open approach to explore the literature of both empirical and non-empirical research. The results showed that most of the non-empirical articles discussed general issues of PLCs in all contexts, including both the Global North and Global South. |
| **5. Type of publications** | This review shortlisted peer-reviewed journal articles, indexed in Scopus |

6. Content	An article is included if it centrally discusses the nature, processes, practices, and impacts of PLCs and factors influencing for PLCs. We adopted the definition (see above) of Louis et al. (2006), as a starting point to guide this review.
7. Research settings	This review focused on research undertaken in K-12 settings.

Identification

Identifying by initial Scopus search
(n = 3050 articles)

Screening

Scanning titles, abstracts, & keywords
(n = 3050 articles)

Excluded 2763 articles

Retained 287 articles

Eligibility

Assessing eligibility based on full texts
(n = 287 articles)

Excluded 212 articles

Retained 75 articles

Appraisal

Assessing quality based on 10 criteria
(n = 75 articles)

Excluded 5 articles

Retained 70 articles

Included

**Analysing shortlisted articles**
(n = 70 articles)

Figure 1. Steps in the review process of the research on PLCs in the Global South

Step 1. We entered a set of keywords in the search engine of Scopus. Scopus is a major digital database that stores peer-reviewed documents in education. Scopus offers more complete bibliographic data than Google Scholar (Zupic & Čater, 2015) and a more comprehensive coverage of relevant, peer-reviewed documents in education than the Web of Science (Hallinger, 2020; Hallinger & Kulophas, 2020). Recently, Scopus has been used as the only database in a number of major systematic reviews (e.g., Hallinger & Kulophas, 2020) and therefore was utilised in the current review.

This set of keywords in this review included: *"professional learning community"* OR *"learning community"* OR *"teacher learning"* OR *"professional community"* OR *"teacher community"* OR *"professional learning"* OR *"professional development"* OR *"professional network"* OR *"community of practice"* OR *"staff development"*. We also keyed in a list of countries in the Global South, as shown in Appendix A.

We set a default function in the search engine of Scopus so that a publication, any part (title, abstract, or list of keywords) of which any of the aforementioned keywords was shortlisted in the first round. In this stage, we delimited the search to peer-review journal articles, English language, and time frame from January 2000 to May 2021. Similar to other international reviews (e.g., Hallinger & Kulophas, 2020), this review considered articles written in English only and therefore potentially missed a hidden literature written in other languages.

Step 2. We scanned the titles, abstracts and keywords of all 3 050 results for immediate relevance. All publications that seemed to be relevant to PLCs was saved for further scrutiny in the subsequent stage. This practice shortlisted 287 potential articles.

Step 3. We read the titles, abstracts, keywords, and full texts of these 287 articles. In this step, we focused our reading on examining if these 287 articles fulfilled all Criterion 3, Criterion 4, Criterion 6, and Criterion 7 (*see* Table 1).

- o We excluded 173 articles because these are not centrally relevant to PLCs in schools. These articles mention the words or phrases such as professional learning and PLC in the abstract or list of keywords, but the main content does not address PLCs as the main topic or narrative of the article.

- o We excluded 26 articles because they are not based on the empirical research undertaken in at least one country/nation in the Global South.

- o We did not obtain full texts of six articles.

- o We excluded one article because it is overly repetitive of another article (of the same team of researchers) that had already been shortlisted for review in this stage.

- o We excluded six articles because they are clearly non-empirical.

As a result, we shortlisted 75 articles for review upon this stage.

Step 4. We developed a framework for appraisal to evaluate these 75 articles retained in Step 3 for the purpose of quality filtering of this review. This framework has 10 criteria, as outlined in Appendix 2 of this report. The results from this appraisal exercise are presented as follows.

- o 46 articles were ranked in the category of 'high quality'.

- o 24 articles were ranked in the category of 'medium quality'.

- o 5 articles were ranked in the category of 'low quality'.

It is important to note that an alternative framework for research evaluation may generate a different pattern of appraisal results from this review. We excluded all articles in the 'low quality' category to enhance the trustworthiness of the evidence base of PLCs in the Global South.

Step 5. We developed an MS Excel spreadsheet to collect the details of each of these 70 articles. These details are shown in Appendix 3. Each major evidence-based theme presented in the Discussion section is built on at least two articles listed in the category of 'high quality'.

3. Overview of the Evidence Base

The evidence base drawn from these 70 reviewed articles has some noteworthy characteristics. *Firstly*, there has been a prominent increase in the volume of publications on PLCs in the Global South in the past five years (2016-2021). *Secondly*, this evidence base has been mainly drawn from empirical research in China (approx. 33% of publications), South Africa (21% of publications), and Malaysia (17% of publications). *Thirdly*, the evidence is constructed from empirical investigations using a range of approaches of qualitative, quantitative, and mixed-methods research. *Fourthly*, most articles have focused on professional development for teachers and provide little evidence on using PLCs as a model of professional development for school leaders in the Global South. These characteristics are detailed in the subsequent parts of this report.
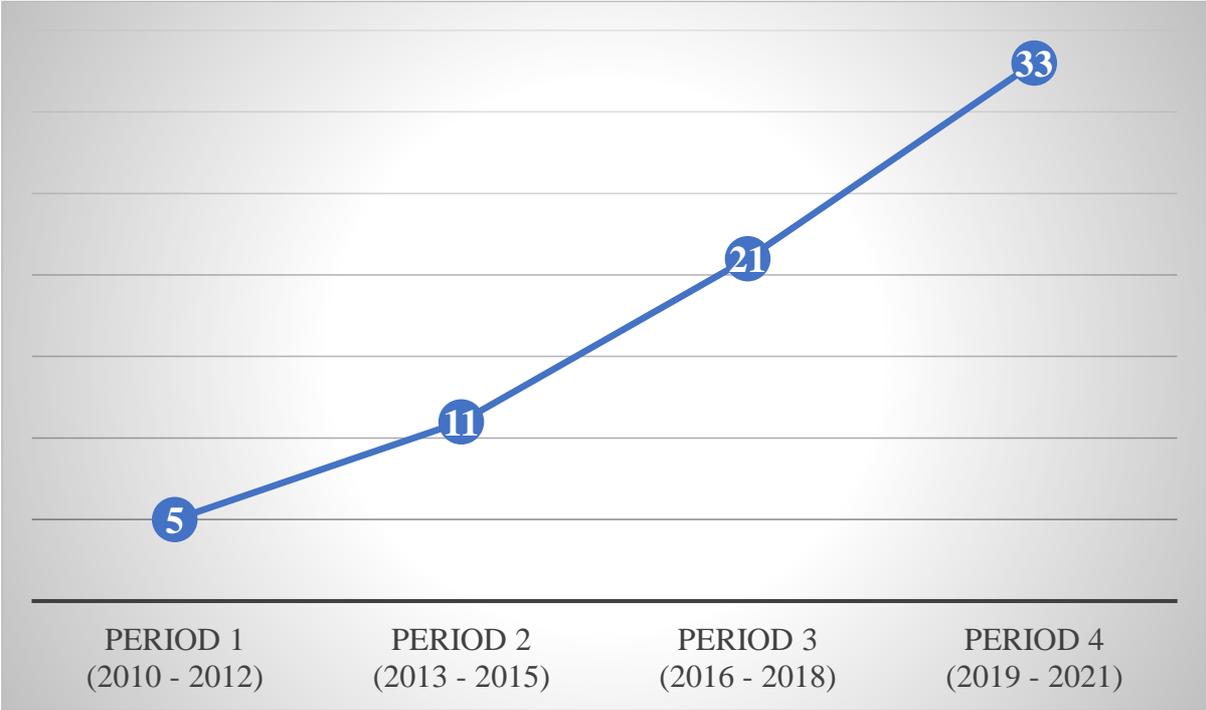

Figure 2. The number of articles across review periods

Generation of evidence on PLCs in the Global South. As noted in the review process, we searched for publications generated between January 2000 and May 2021. The first two steps of the review process shortlisted 287 potential articles, published from January 2002 to May 2021. Twelve of these 287 publications were made between 2002 and 2009. Upon further rounds of screening, assessing eligibility and appraising publications in the three remaining steps, the 70 articles included in the finalised list were issued between 2010 and 2021. We divided this time (2010-2021) equally into four periods to observe any possibly trends in generation of evidence regarding PLCs in the Global South. As shown in Figure 2, there is a visible upward trend in the number of articles over years. This trend indicates a growing scholarly interest in uncovering PLCs in the Global South.
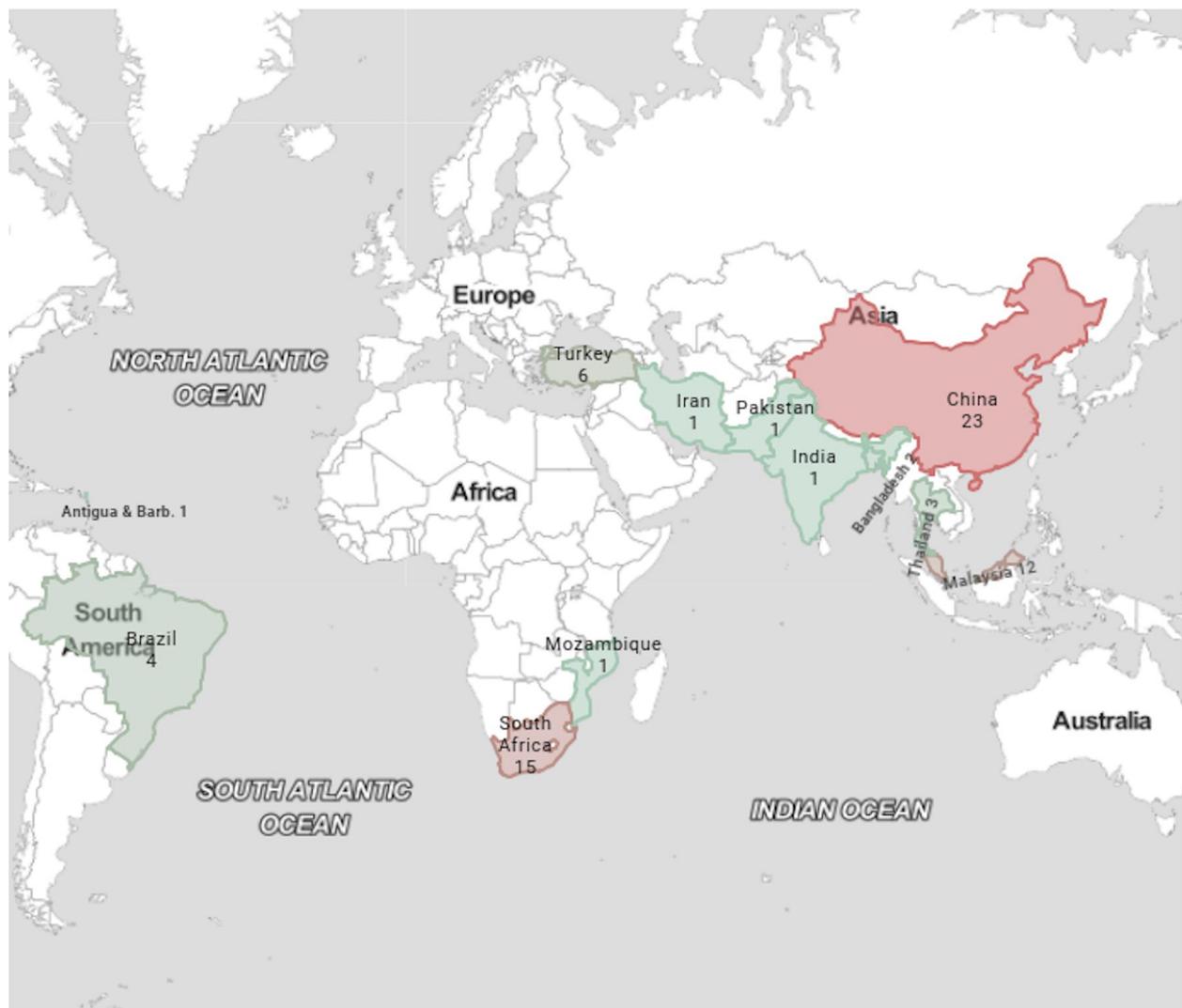
Figure 3. The number of articles by country

Geographical distribution of the PLCs literature in the Global South. The heat map in Figure 3 displays the distribution of the empirical research on PLCs in the Global South from 2010 to 2021. The review found 70 scholarly contributions from twelve countries across continents. 70% of the articles (49 out of 70 articles) were authored in the Asian region. The remaining articles draw from studies in Africa (16 articles) and Latin America and Caribbean (5 articles). Considering the contributions by country, China (23 articles) hosted the most articles in this list, followed by South Africa (15 articles) and Malaysia (12 articles).
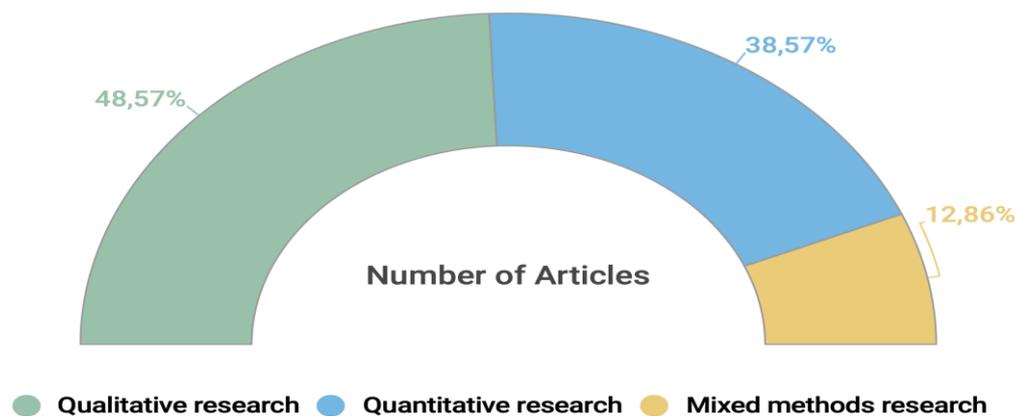
Figure 4. The number of articles by research approach

Methodological patterns of research on PLCs in the Global South. Turning next to the research approaches used in the reviewed studies of PLCs, all empirical articles were categorically grouped into quantitative, qualitative or mixed-methods approaches (see Figure 4). There is a relative balance in the use of quantitative and qualitative methods. Of 70 articles, 27 adopted a quantitative research approach while 34 articles used a qualitative approach and nine articles drew on mixed methods research.

4. Definitions of PLCs

(Question 1. How are PLCs defined?)

Of 70 publications in the finalist for review, a group of 53 articles discuss or adopt, of varying degree of explicitness and specificity, the definitions of PLCs. Most of these articles use PLC as an underlying terminology. A small number of studies (e.g., Hunuk et al., 2013; Wang et al., 2017) refer to three alternative terminologies (i.e., Community of Practice, Teacher Cluster, and Teaching and Research Group) to suit their research contexts. For example, the term of "Teacher Cluster" tend to be used in South Africa (Akinyemi et al., 2020) while "Teaching and Research Group" is commonly used in China (Zhang et al., 2017). An analysis of these definitions and discussions reveals some perspectives of defining a PLC. These perspectives conceptualise PLCs as (1) a network, (2) a space, (3) an approach, and (4) as a process. These perspectives are complementary to each other.
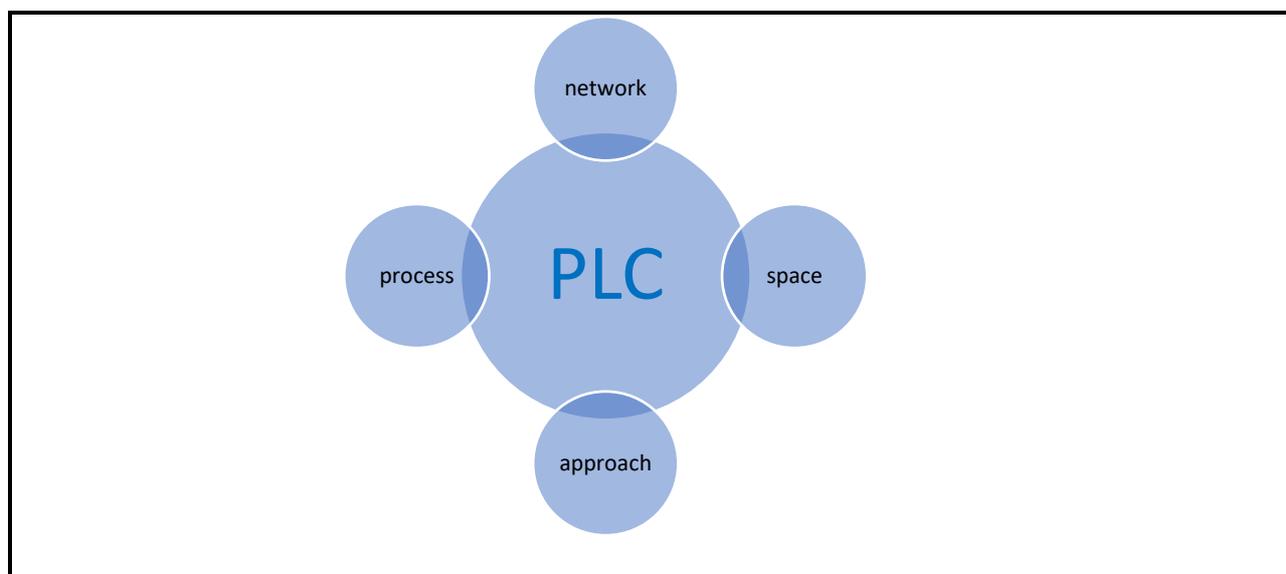
Figure 5. Perspectives in conceptualising PLCs

PLC as a network. At least 35 articles (e.g., Gonçalves et al., 2021; Liang et al., 2020; Zhang et al., 2020) highlight PLC as a network of individuals (e.g., teachers, school leaders). These individuals share a common interest in learning and teaching and a desire for collaborative improvement of student learning and school improvement. This network functions ideally on the basis of equal sharing and collaboration. The members in a PLC network have a degree of professional interdependence. Two examples are presented as follows.

Zhang, Yin and Wang (2020) built on the extant literature to define PLC as *"a group of educators who engage in continuous and collaborative sharing, investigation and reflection on their professional practice with the aim of promoting school improvement and student learning"* (p. 2-3).

Moodley (2019) viewed PLC as "*an assembly of individuals who come together to engage regarding a common concern, so as to improve or solve a given situation*" (p. 2).

PLC as a space. A group of six articles (e.g., Maitry, 2010; Mu et al., 2018; Woolway et al., 2019) imply PLC as a space for professional learning. PLCs may be present in physical and/or virtual spaces. Such spaces tend to be deliberately organised with the aim of promoting collaborative enquiry, professional dialogue and other collaborative activities. The examples of definitions in this category are:

Zahedi et al. (2021) adopted the view of Dogan et al. (2016) that defined PLCs as *"spaces where educators collaborate and engage in recurring cycles of inquiry or reflective dialogue to increase student learning"* (p. 292).

Mu et al. (2018) cited Hord (1997) that refered to PLC as *"a social space that facilitates continuous inquiry and improvement of teaching practices by engaging teachers in systematic, creative, and collaborative activities of professional development"* (p. 25).

PLC as an approach / a strategy. At least six articles (Chauraya & Brodie, 2018; Gonçalves et al., 2020; Zhu et al., 2019) tend to conceptualise PLC as an approach to or strategy for professional development. For instance, Gonçalves et al. (2020) advocated PLCs as *"one of the most used strategies to enhance successful and collaborative CPD [continuing professional development]"* (p. 2). Chauraya and Brodie (2018) referred to the extant literature that highlights PLCs *as "a*

teacher professional development approach'' to develop teachers' subject knowledge and practices (p. 650).

PLC as a process. A group of six articles (Wang et al., 2017; Zonoubi et al., 2017) underscore PLC as a process of establishing a collaborative environment to promote learning for teachers and school leaders.

> Akinyemi et al. (2020, p. 1) described PLC as *"a process of coming together by teachers to ascertain their professional requirements and also find means of working together to attain their goals"*.

> Ye et al. (2021, p. 1) highlighted PLC as *"a process of participating in a community of practice through mutual interaction with other community members"*.

5. Evidence on initiation, impact and conditions of PLCs

5.1. Initiation of PLCs

(Question 2. How and by whom are PLCs initiated?)

A few articles discuss, of varying depth, the context of PLCs in their research (e.g., Brodie, 2014; Gonçalves et al., 2020; Murugaiah et al., 2013; Zhang & Yuan, 2020; Zheng et al., 2021). An analysis of these articles highlights some approaches to initiate PLCs in the Global South. These complementary approaches can be categorised as *a contrived approach*, *a project-based approach*, and *a teacher-initiated approach*. Yet, these articles offer no firm basis to make any comparison about the effectiveness of these approaches. The following part elaborates on each of these approaches.

A contrived approach. A contrived approach refers to initiation of a PLC as mandate for schools. Research (Zhang & Yuan, 2020; Zhang et al., 2017; Zheng et al., 2021) in mainland China has

uncovered that a PLC in Chinese schools tends be known as a Teaching Research Group (TRG). A TRG is typically organised intentionally for teachers of the same subject or grade in a school. The model of TRG is similar to that of "Lesson Preparation Group" and "Grade Group" (Zhang et al., 2017). It was initiated by the Chinese Ministry of Education in the 1950s with the aim of promoting collaborative professional learning for teachers (Chen, 2006). Schools in China are directed to organise TRGs as a platform for teachers to engage regularly in professional activities such as peer classroom observation, collaborative lesson planning, and collaborative action research (Yuan & Burns, 2017; Zhang & Yuan, 2020).

A project-based approach. A project-based approach involves initiating a PLC as part of a professional development project (Murugaiah et al., 2013; Zhang & Liu, 2019) or an action research project (Brodie, 2014; Gonçalves et al., 2020). For example, Zhang and Liu (2019) investigated online PLCs launched as part of a five-year teacher development programme coordinated by the Chinese Ministry of Education. This programme required participants to spend 120 hours participating in virtual PLCs and to complete three online tasks, namely watching video cases, engaging in discussion, and sharing reflections. Online PLCs described in Murugaiah et al. (2013) provide another example of a project-based approach. As result of a school-university partnership in Malaysia, these online PLCs were established to provide teachers with a space for collaborative learning to optimise technologies in their classes (Murugaiah et al., 2013). Brodie's (2014) article was drawn from an action research project that involved establishing a small-size PLC of three to four teachers and a group leader. This PLC focused on discussing strategies to work with students' common errors associated with mathematical concepts.

A teacher-initiated approach. A teacher-initiated approach forms PLC as result of the needs of small groups of teachers for mutual support at work (Gonçalves et al., 2020; Vandeyar, 2013). Vandeyar (2013) provided an instance of teachers establishing PLCs in South African schools to

support each other in implementing a national policy of using Information Communications Technology (ICT) in classroom teaching. These teachers faced challenges in the use of ICT as a result of insufficient guidance and district support in enacting this policy (Vandeyar, 2013). Similarly, a group of teachers of physical education in Gonçalves et al. (2020) initiated a small-size PLC with the support of an external facilitator to support each other with subject knowledge and professional opportunities.

5.2. Impact of PLCs

(Question 3. Are PLC effective as an instrument for PD of teachers and/or school leaders?)

The review was set out to explore the evidence concerning the impacts of PLCs on professional development for both teachers and school leaders. However, the evidence base from the final shortlist of 70 articles centrally discusses the impacts of PLCs on teachers' professional development and lacks substantive discussion on school leaders' professional development. These articles provide evidence on the positive impacts of PLCs on supporting teachers' collaborative learning, development of teaching efficacy, innovative changes, and trusting relationships in schools. These impacts are presented in the following four key themes.

a) PLCs support teacher collaborative learning

At least eight articles (e.g., Gonçalves et al., 2021; Kempen & Steyn, 2017; Rahman, 2012) have suggested PLCs as an effective platform for teacher professional learning. These articles, mostly drawn from qualitative research, have highlighted the significance of PLCs in promoting collaborative learning among teachers. This collaborative learning is promoted through teachers' sustained discussions of their pedagogical practices, subject-specific matters and classroom management, sharing their concerns, and their sharing of instructional materials and resources (Khalid et al., 2013; Rahman, 2011; Rolando et al., 2014). These discussions would benefit teachers' professional development (Kempen & Steyn, 2017; Mu et al., 2018).

For example, the analysis of Rolando et al. (2014) concerning the feedback from the members of a virtual PLC for Brazilian teachers of biology education suggested that this PLC provides them with opportunities to learn from and share resources with their peers. Bangladeshi Science teachers in Rahman (2011) positively regarded discussions and workshops in PLCs as opportunities to discuss their professional issues and solutions.

Zhang and Wong (2018) conceptualised two processes (i.e., implementation-oriented & experimentation-oriented) of teacher learning occurring in a PLC of a Chinese secondary school. Teachers learn, from one another, the existing practices in their school in the implementation-oriented process while their collaborative learning focuses on innovative practices in the experimentation-oriented process. Clearly, these two processes both promote teacher collaborative learning on a complementary basis.

b) Participation in PLCs supports teachers' development of teaching efficacy

At least three articles (Lian et al., 2020; Rahman, 2012; Zonoubi et al., 2017) evidence the link between teachers' participations in PLCs and their increased teaching efficacy.

In Zonoubi, Eslami Rasekh, and Tavakoli (2017), a group of experienced Iranian teachers of English as a Foreign Language reported an increase in their self-efficacy of the use of innovative teaching practices while the group of novice teachers reported their improved self-efficacy of classroom management and professional autonomy. Zonoubi et al. (2017) observed an increase in self-efficacy of English language proficiency from teachers in both of these groups, probably resulting from their interactions in English in PLCs. Rahman (2012) similarly suggested that involvement in collaborative activities within PLCs promoted teachers' sense of efficacy in developing and delivering a constructive teaching approach in their context.

Surveying 844 teachers from 28 schools in China, Lian, Song and Sun (2020) similarly affirmed that teachers' frequent participation in effective PLCs would improve their self-efficacy of teaching strategies, classroom management, and student engagement. In addition, Lian, Song and Sun (2020) suggested teachers' participation in PLCs would promote their well-being, through improving their self-efficacy, though this finding would require empirical verification in future research.

c) Participation in PLCs supports teachers' innovative changes in teaching

A group of six articles (e.g., Brodie, 2014; El-Hani & Greca, 2013; Vandeyar, 2013) provide some evidence on the influences of teachers' participation in PLCs on their process of changing their practices innovatively.

Two studies (Brodie, 2014; Chauraya & Brodie, 2017) in South Africa suggested that involvement in authentic discussions in PLCs could enhance teachers' knowledge about the student learning needs and innovate their teaching to support student learning more effectively. In the Turkish context, the mixed methods research study of Hunuk et al. (2013) concluded that teacher participation in a PLC based on their specific needs tended to change their teaching practices to focus more on their students' needs. The study of El-Hani and Greca (2013) in Brazil suggested that science teachers in a virtual PLC with the participation of researchers tended to use research evidence to inform their teaching practices.

Song (2012) surveyed a sample of 1,611 high school teachers in mainland China to understand impacts of PLCs on teacher receptivity to change. Song's (2012) analyses indicated that teacher participation in PLC was positively associated with their receptivity of implementation of school reforms. PLC in this study was delineated into four related factors, namely (i) shared decision making, (ii) shared sense of purpose and focus on student learning, (iii) collaborative activity and deprivatised practice, and (iv) staff support and co-operation.

There is evidence from South Africa that PLCs supported schools with interpretation and implementation of national policies related to ICT (Information Communications Technology) (Vandeyar, 2013). The teachers formed informal PLCs to provide mutual peer support for implementation of ICT practices, given the "lack of policy and adequate policy guidelines" (Vandeyar, 2013, p. 256).

d) PLCs support teachers in building trusting relationships

The review found evidence suggesting that a PLC functions on the basis of trusting relationships and this trust could be enhanced through effective collaboration among its members (Akinyemi et al., 2020; Akinyemi et al., 2019; Kempen & Steyn, 2017). Effective collaborative working in PLCs would give teachers a sense of "togetherness" and "closeness" and help them to build trust with colleagues (Kempen & Steyn, 2017). This accumulated trust from the collaboration in PLCs would further inspire teachers to support one another with learning and teaching (Akinyemi et al., 2020).

5.3. Conditions for PLCs

(Question 4. Are effective PLC sustainable?)

The reviewed articles provide little evidence to directly address Question 4 *(Are effective PLC sustainable?)*. However, they provide evidence-based insights into important conditions for development, implementation, and sustainability of PLCs. These conditions can be categorised as: leadership support, readiness of infrastructure, focus on learning and teaching, and quality of trusting relationships.

5.1. Support of leadership

At least 10 reviewed articles provide a range of evidence that highlights the significance of leadership support in developing, implementing and sustaining PLCs in the Global South (e.g., Liu & Yin, 2020; Luyten & Bazo, 2019; Özdemir, 2019). The evidence recommends ethical, instructional and transformational leadership as supportive models and practices for PLCs in schools. More specifically, the practices associated with transformational leadership and

instructional leadership such as supporting visioning of PLCs, providing structural and individualised support, acting as a source of intellectual stimulation, and developing a collaborative, reflective school culture of learning are evidenced to positively influence development, implementation and sustainability of PLCs (Hassan et al., 2019; Luyten & Bazo, 2019; Ming et al., 2020; Somprach et al., 2017).

These practices could be evidenced through a variety of actions, as exemplified in Table 2.

Table 2. Synthesis of research evidence on supportive leadership practices for PLCs

Supportive leadership practices for PLCs	Evidenced in
Creating PLC meeting time for teachers (within their office hours)	Kin & Kareem (2021); Zahedi et al. (2021)
Ensuring an appropriate meeting space and technology to support discussions for PLCs	Zahedi et al. (2021)
Attending PLCs meetings in a collaborative role	Kin & Kareem (2021); Somprach et al. (2017); Zahedi et al. (2021)
Emphasising the importance of PLCs through communications	Zahedi et al. (2021)
Exercising ethical leadership through treating teachers with integrity, sincerity and respect and promoting an ethical climate in PLCs	Liu & Yin (2020); Luyten & Bazo (2019); Somprach et al. (2017)
Creating structures to engage teachers in participative decision making in PLCs	Kin & Kareem (2021); Luyten & Bazo (2019); Zahedi et al. (2021)
Encouraging teachers' experimentation and innovation in teaching	Zhang & Wong (2018)

5.2. Readiness of infrastructure: *time, space, communication, and financial support*

A group of nine articles (e.g., Chua et al., 2020; Tahir & Musah, 2020; Younger & George, 2013) have underscored the importance of infrastructure-related factors in establishing and sustaining PLCs. The broad term of 'infrastructure' refers to a variety of factors such as time structure (Akinyemi et al., 2019; Chua et al., 2020; Khalid et al., 2014; Younger & George, 2013; Tahir &

Musah, 2020; Zhang et al., 2017), communication mechanism (Zhang & Yuan, 2020), financial resources (Bellibas et al., 2017; Tahir & Musah, 2020; Zhang et al., 2017), and space for collaborative professional learning (Younger & George, 2013; Zhang & Yuan, 2020).

Firstly, an appropriate time structure has been mentioned as one of the critical conditions for implementing and sustaining PLCs (Akinyemi et al., 2019; Chua et al., 2020; Khalid et al., 2014; Tahir & Musah, 2020; Younger & George, 2013; Zhang et al., 2017). Empirical research in Antigua and Barbuda (Younger & George, 2013), China (Chua et al., 2020; Zhang et al., 2017), Malaysia (Khalid et al., 2014), and South Africa (Akinyemi et al., 2019) has consistently highlighted lack of time as a barrier to authentic collaborative learning in either face to face or virtual PLCs (Khalid et al., 2014). The time issue is closely connected with a sense of overwhelming workload that requires teachers to handle daily administrative tasks in addition to teaching and assessment (Akinyemi et al., 2019; Chua et al., 2020). The evidence from this research suggests a need to structure time, within teachers' workload for collaborative activities in PLCs and protect this time.

Secondly, collaborative learning in PLCs requires sustainment of meaningful professional interactions, both formally and informally. Establishing and maintaining a sound mechanism to support communications within and across PLCs is critical in routinising collaborative learning among PLC members (Zhang & Sun, 2018).

Thirdly, the financial support is documented as a condition for implementation of PLCs (Tahir & Musah, 2020; Zhang et al., 2017). These studies highlighted the challenges of sustaining PLCs in the schools where there are limited financial resources. The financial constraint is a barrier to supporting schools with essential technologies for enacting initiatives for collaborative learning (Tahir & Musah, 2020), to having required human resources to assist teachers with administrative

work to actively engage in PLCs (Zhang et al., 2017), and to having external expertise support (Zhang et al., 2017).

Fourthly, the review highlights a need for supportive space for authentic teacher collaborative learning (Younger & George, 2013; Zhang & Yuan, 2020). This space could be physical (e.g., Wang et al., 2017; Zhang et al., 2016) or virtual (e.g., El-Hani & Greca, 2013; Lin et al., 2016). Ideally, this space is designed to inspire the community's sharing of innovative practices and to give its members a sense of psychological safety to share and leverage collective efforts to address their professional challenges and struggles (Younger & George, 2013).

5.3. Focus on learning & teaching

The evidence suggests that the focus of PLCs should be on learning and teaching, rather than on addressing administrative issues (Zahedi et al., 2021; Zhang & Liu, 2019). This focus should shape the vision, goals and agenda of PLCs and be explicitly communicated with the members.

Zahedi et al. (2021) investigated implementation of PLCs in two schools in India. In each school, the organisation of these PLCs was based on the grade levels and subjects. Each PLC had between five and nine teachers and one facilitator. A specific protocol and agenda was developed for each meeting. There were maximum two PLC meetings per month. This mixed-methods study of Zahedi et al. (2021) identified and confirmed three important characteristics of an effective PLC, namely meetings focused on learning and teaching matters, data-driven discussions and decisions, and supportive leadership.

Zhang and Liu (2019) investigated the factors influencing teacher learning engagement in online PLCs. They surveyed 520 teachers of primary and secondary schools that participated in a training programme initiated by the Chinese Ministry of Education. Involvement in these online PLCs required each teacher to watch video cases, engage in online discussions, and write up reflections.

The statistical results from this study indicated that teachers tended to engage (more) in these PLCs' activities if they believed these activities were relevant to learning and teaching.

5.4. Quality of collaborative relationships

The review suggests that teachers' participation in PLCs is dependent on the quality of collaborative relationships among PLC members. Healthy professional relationships with peers would promote teachers' engagement in collaborative discussions, activities, and decision making in PLCs (Akinyemi et al., 2020; Bellibas, 2017; Woolway et al., 2019; Zhang & Sun, 2018).

In a longitudinal study in South Africa, Woolway et al. (2019) analysed the professional development of four teachers participating in a PLC from data collected at different points over two years. Woolway et al. (2019) observed the development in the efficacy of inexperienced teachers in initiation and participation in reflective discussions. Based on its evidence, this study argued that collaborative relationships between teachers were instrumental in building their efficacy of leading professional learning and in sustaining this small PLC (Woolway et al., 2019).

Akinyemi et al. (2020) maintained that the positive professional relationships enabled PLC members to support one another in discussing and managing challenges. This finding was based on an analysis of interview and survey data from 79 participants from ten high schools in South Africa. Similarly, two quantitative research studies in China (Zhang & Sun, 2018) and Turkey (Bellibas, 2017) suggested that PLC members' strong collaborative relationships would promote fruitful discussions on learning, teaching and assessment matters.

6. Conclusions and recommendations

This section presents some conclusions and recommendations from this systematic review. Insights from this review enable us to make ten recommendations for practice, policy, and future research. It would require a strong partnership of policy makers, practitioners and researchers to implement these recommendations.

Providing stronger leadership and policy support for PLCs. A PLC needs to be deliberately orchestrated and nurtured, whether it is initiated at the group level, school level, or system level. While the evidence emphasises the importance of leadership and policy support at different levels, many PLCs face major challenges as a result of insufficient support in sustaining their activities. It is important to provide stronger leadership and policy support, at the school and system levels, for PLCs within and across schools. This support should include allocation of essential human, technological, and financial resources to enact initiatives in PLCs.

Developing an appropriate time structure for teacher participation in PLCs. The current review evidences time as a crucial factor influencing teachers' sustained and active participation in PLCs. There is concern about teachers' heavy load of daily administrative, teaching, and assessment work. Teachers tend to experience a sense of extra work in engagement with activities of PLCs. On this basis, we argue for a need to structure time for participation in PLCs within teacher workload. Such a supportive time structure would sustain teachers' engagement in collaborative professional learning linked with PLCs.

Focusing PLCs on learning and teaching. The evidence suggests that teachers tend to be more sustainably engaged in discussions on the matters of learning and teaching. It is important to avoid turning PLCs into places to mainly deal with daily administrative issues. The vision, goals and agenda of PLCs should focus on (improving excellence of) learning and teaching and be communicated clearly with the members.

Promoting PLCs' agenda for equitable and inclusive education. The current review argues that PLCs function on the collective and democratic basis and therefore is potentially an important place to promote dialogues on and forward actions on equity and inclusion in schools. Two articles

(Mu et al., 2018; Wang et al., 2017) in this review have implications on the benefits of PLCs in addressing issues of inequality in learning and teaching. We recommend stronger support from the policy, leadership and research in exploring and promoting the roles of PLCs in advancing the agenda for equitable and inclusive education.

Theorising and addressing teachers' inherent tensions and challenges in participating PLCs. The review suggests that teachers experience inherent tensions and challenges in participating in PLCs. However, it found little evidence to enable a systematic understanding of the nature, reasons, and effects of these tensions and challenges. Hence, more research efforts to theorise these tensions and challenges of PLC members would be needed to provide the leadership and policy with systematic insights into supporting PLCs more effectively.

Developing leaders for PLCs. The international literature (Nguyen et al., 2020; Robinson et al., 2008) has evidenced leadership focussed on teacher professional development and learning as an important pathway to improved student learning. This current review has identified strong leadership support as a critical condition for initiation, implementation and sustainment of PLCs. It signals the significance of developing competences for school leaders to lead teacher professional learning and to promote PLCs. This evidence supports our recommendation for explicitly incorporating or strengthening elements of leadership for professional development into programmes of school leadership preparation and development.

Supporting PLCs for school leaders. We set out the current review to synthesise and evaluate the evidence on employing PLCs for professional development of teachers and school leaders in the Global South. As noted earlier in this report, the articles in the final list for review centrally discuss PLCs for teachers and provide little evidence on PLCs for school leadership. Like teachers, school leaders would benefit from support networks to share their good practices and to address

challenges. Developing and supporting PLCs more strongly for school leaders is essential in complementing formal programmes of leadership preparation and development in growing effective leaders for professional development. More rigorous research on PLCs for school leaders would provide insights into practice, policy and research concerning professional development for school leaders.

Developing an evaluation framework for development. Evaluation is an important process in the models of professional development in education. The current review hardly found any evidence, articles or models centrally addressing the evaluation of implementation of PLCs. This gap in the empirical literature in the Global South highlights a need for the research community to work with schools and systems to develop a context-sensitive framework to evaluate implementation of programmes within and across PLCs over time. This framework should be built on evidence and be designed to support effective implementation and sustainability of PLCs.

Evaluating the cost effectiveness of PLC model of professional development. PLC is one of the three popular models for professional development, alongside lesson study and instructional coaching (Sims et al., 2021). Our current review identified a range of evidence concerning the benefits of PLCs on teacher professional learning that is linked with student learning. There is a common-sense argument that PLCs are cost effective, given they leverage the internal expertise and are inextricably associated with the core business of schools. No studies evaluating the cost effectiveness of the PLC model were found in the current review. Future research could verify this argument on the cost effectiveness of PLCs.

Exploring complementarity of PLCs and other models of professional development. The evidence in our review highlights PLCs as an important model for professional development of teachers and potentially for school leaders. The review of Sims et al. (2021) suggests the

complementarity of three forms (i.e., lesson study, instructional coaching, and teacher learning communities). However, it remains unclear, theoretically and empirically, about how these forms of professional development complement each other. Future research could explore, in depth, as to how each of these forms, including PLCs, should be developed to effectively complement other important forms of professional development.

Bibliography

*This section has two parts. **Part 1** presents the bibliographical details of 70 articles in the final list for this review. A summary of these articles can be found in Appendix 3. **Part 2** lists the bibliographical details of additional references cited to support writing of the sections of Introduction, Review Process, and Recommendations of the report.*

Part 1. Bibliographical details of 70 reviewed articles

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Appendix 1: Screen print from Scopus search

3,050 document results

(TITLE-ABS-KEY ("professional learning community") OR TITLE-ABS-KEY ("learning community") OR TITLE-ABS-KEY ("teacher learning") OR TITLE-ABS-KEY ("professional community") OR TITLE-ABS-KEY ("teacher community") OR TITLE-ABS-KEY ("professional learning") OR TITLE-ABS-KEY ("professional development") OR TITLE-ABS-KEY ("professional network") OR TITLE-ABS-KEY ("community of practice") OR TITLE-ABS-KEY ("staff development") AND NOT TITLE-ABS-KEY (university) AND NOT TITLE-ABS-KEY ("higher education") AND NOT TITLE-ABS-KEY (pre-service)) AND PUBYEAR > 1999 AND PUBYEAR < 2022 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (AFFILCOUNTRY , "South Africa") OR LIMIT-TO (AFFILCOUNTRY , "Turkey") OR LIMIT-TO (AFFILCOUNTRY , "China") OR LIMIT-TO (AFFILCOUNTRY , "Malaysia") OR LIMIT-TO (AFFILCOUNTRY , "Brazil") OR LIMIT-TO (AFFILCOUNTRY , "India") OR LIMIT-TO (AFFILCOUNTRY , "Thailand") OR LIMIT-TO (AFFILCOUNTRY , "Pakistan") OR LIMIT-TO (AFFILCOUNTRY , "Iran") OR LIMIT-TO (AFFILCOUNTRY , "Kazakhstan") OR LIMIT-TO (AFFILCOUNTRY , "Ukraine") OR LIMIT-TO (AFFILCOUNTRY , "Serbia") OR LIMIT-TO (AFFILCOUNTRY , "Viet Nam") OR LIMIT-TO (AFFILCOUNTRY , "Colombia") OR LIMIT-TO (AFFILCOUNTRY , "Nigeria") OR LIMIT-TO (AFFILCOUNTRY , "Jordan") OR LIMIT-TO (AFFILCOUNTRY , "Ghana") OR LIMIT-TO (AFFILCOUNTRY , "Kenya") OR LIMIT-TO (AFFILCOUNTRY , "Tanzania") OR LIMIT-TO (AFFILCOUNTRY , "Argentina") OR LIMIT-TO (AFFILCOUNTRY , "Ethiopia") OR LIMIT-TO (AFFILCOUNTRY , "Uganda") OR LIMIT-TO (AFFILCOUNTRY , "Botswana") OR LIMIT-TO (AFFILCOUNTRY , "Lebanon") OR LIMIT-TO (AFFILCOUNTRY , "Bangladesh") OR LIMIT-TO (AFFILCOUNTRY , "Fiji") OR LIMIT-TO (AFFILCOUNTRY , "Jamaica") OR LIMIT-TO (AFFILCOUNTRY , "Rwanda") OR LIMIT-TO (AFFILCOUNTRY , "Sri Lanka") OR LIMIT-TO (AFFILCOUNTRY , "Ecuador") OR LIMIT-TO (AFFILCOUNTRY , "North Macedonia") OR LIMIT-TO (AFFILCOUNTRY , "Zimbabwe") OR LIMIT-TO (AFFILCOUNTRY , "Georgia") OR LIMIT-TO (AFFILCOUNTRY , "Uzbekistan") OR LIMIT-TO (AFFILCOUNTRY , "Mozambique") OR LIMIT-TO (AFFILCOUNTRY , "Nepal") OR LIMIT-TO (AFFILCOUNTRY , "Cuba") OR LIMIT-TO (AFFILCOUNTRY , "Iraq") OR LIMIT-TO (AFFILCOUNTRY , "Malawi") OR LIMIT-TO (AFFILCOUNTRY , "Mauritius") OR LIMIT-TO (AFFILCOUNTRY , "Mongolia") OR LIMIT-TO (AFFILCOUNTRY , "Myanmar") OR LIMIT-TO (AFFILCOUNTRY , "Papua New Guinea") OR LIMIT-TO (AFFILCOUNTRY , "Peru") OR LIMIT-TO (AFFILCOUNTRY , "Afghanistan") OR LIMIT-TO (AFFILCOUNTRY , "Albania") OR LIMIT-TO (AFFILCOUNTRY , "Cambodia") OR LIMIT-TO (AFFILCOUNTRY , "Laos") OR LIMIT-TO (AFFILCOUNTRY , "Morocco") OR LIMIT-TO (AFFILCOUNTRY , "Algeria") OR LIMIT-TO (AFFILCOUNTRY , "Armenia") OR LIMIT-TO (AFFILCOUNTRY , "Bhutan") OR LIMIT-TO (AFFILCOUNTRY , "Eritrea") OR LIMIT-TO (AFFILCOUNTRY , "Namibia") OR LIMIT-TO (AFFILCOUNTRY , "Solomon Islands") OR LIMIT-TO (AFFILCOUNTRY , "Somalia") OR LIMIT-TO (AFFILCOUNTRY , "Sudan") OR LIMIT-TO (AFFILCOUNTRY , "Syrian Arab Republic") OR LIMIT-TO (AFFILCOUNTRY , "Zambia") OR LIMIT-TO (AFFILCOUNTRY , "Antigua and Barbuda") OR LIMIT-TO (AFFILCOUNTRY , "Azerbaijan") OR LIMIT-TO (AFFILCOUNTRY , "Belize") OR LIMIT-TO (AFFILCOUNTRY , "Benin") OR LIMIT-TO (AFFILCOUNTRY , "Bosnia and Herzegovina") OR LIMIT-TO (AFFILCOUNTRY , "Central African Republic") OR LIMIT-TO (AFFILCOUNTRY , "Costa Rica") OR LIMIT-TO (AFFILCOUNTRY , "Dominica") OR LIMIT-TO (AFFILCOUNTRY , "Kiribati") OR LIMIT-TO (AFFILCOUNTRY , "Lesotho") OR LIMIT-TO (AFFILCOUNTRY , "Libyan Arab Jamahiriya") OR LIMIT-TO (AFFILCOUNTRY , "Macedonia") OR LIMIT-TO (AFFILCOUNTRY , "Moldova") OR LIMIT-TO (AFFILCOUNTRY , "Panama") OR LIMIT-TO (AFFILCOUNTRY , "Saint Lucia") OR LIMIT-TO (AFFILCOUNTRY , "Samoa") OR LIMIT-TO (AFFILCOUNTRY , "Senegal") OR LIMIT-TO (AFFILCOUNTRY , "Suriname") OR LIMIT-TO (AFFILCOUNTRY , "Tunisia") OR LIMIT-TO (AFFILCOUNTRY , "Undefined")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (LANGUAGE , "English"))

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Appendix 2. Framework for quality appraisal of research articles

Criteria	Yes (1)	No (0)
1. Are the research questions or objectives clearly and appropriately defined?		
2. Is the research design appropriate for addressing the research question(s)/objective(s) and clearly presented in the article?		
3. Is the sampling strategy appropriately justified?		
4. Does the article clearly describe the setting of data collection?		
5. Is / Are the method(s) of data collection appropriate for addressing the research question(s) / objective(s) and clearly presented in the article?		
6. Is / Are the key concept(s) (e.g., PLC) clearly defined in the article?		
7. Is / Are the method(s) of data analysis appropriate for addressing the research question(s) / objective(s) and clearly presented?		
8. Is / Are the research question(s) or objective(s) answered?		
9. Are the discussion/conclusion(s)/implication(s) data appropriate?		
10. Is there evidence of attention to ethical issues?		
Total Score		

Yes = Score 1; **No** = Score 0

High quality = 8-10; **Medium quality** = 5-7; **Low quality** = 0-4

Appendix 3. A summary of 70 articles in the final list for this review

No	Authors	Title	Year	Country	Methodology	Sample	Key findings/ Discussion	Quality rating
1	Vasinayanuwa-tana, T., Teo, T.W., Ketsing, J.	Shura-infused STEM professional learning community in an Islamic School in Thailand	2021	Thailand	Qualitative: *interviews, observations*	Teachers in PLC of a school	The articles shows how Shuratic [Islamic culture] practices when integrated into the PLC processes could empower teachers to change their understanding and beliefs in STEM teaching. The findings of this study have implications for educators and researchers interested to establish STEM PLC in Islamic school contexts to support and develop science teachers to accept and take on the challenge in STEM teaching.	High
2	Ye, W., Liang, W., Wang, H.	Teaching and research officer-led cross-school teacher learning communities in China: perspective of organisational learning	2021	China	Qualitative: *interviews, observations*	Teachers in two PLCs	The findings showed that, due to different contextual factors, the cases (two investigated PLCs) showed different learning cultures but shared several similar learning mechanisms. This article concludes by presenting a 'context-learning mechanism-learning	Medium

							value' framework for understanding organisational learning in TRO (teaching and research officer-led) cross-school teacher learning communities in China.	
3	Kin, T.M., Kareem, O.A.	An Analysis on the Implementation of Professional Learning Communities in Malaysian Secondary Schools	2021	Malaysia	Quantitative: *survey*	971 school leaders and teachers	Although contextual factors such as decentralized school system, the policy environment and teachers' workload are potential factors that might impact the development of PLCs, the incompetence of the teachers in practising Collaborative Learning, Collective Inquiry and Reflective Dialogue would significantly hinder their professional practices in PLCs.	Medium
4	Gonçalves, L., Parker, M., Luguetti, C., Carbinatto, M.	'We united to defend ourselves and face our struggles': nurturing a physical education teachers' community of practice in a precarious context	2021	Brazil	Qualitative: *observations, records of meetings, & interviews*	8 participants: 6 teachers, a facilitator, and a cricial friend	Results indicated the development of a democratic Community of Practice (CoP) in a precarious situation through an ongoing and dynamic progression where teachers built their own practice to overcome the marginalisation of PE and were supported to exist. In this untenable context, the nurturing of a democratic CoP focused on teachers' survival and 'defending themselves'	High

							while learning to struggle together to change their micro-context.	
5	Zahedi, S., Bryant, C.L., Iyer, A., Jaffer, R.	Professional learning communities at a primary and secondary school network in India	2021	India	Mixed methods: *individual interviews, focus group interviews, observations, documents*	79 participants (teachers, facilitators, department coordinators, PLC heads, principals, and other participants) in 2 schools	Participation in PLCs might have supported increased collaboration among teachers, improved classroom teaching, and increased unity and consistency in practice across classrooms, at two schools in India. Factors supporting PLCs include focus on teaching & learning, supportive leadership, data-driven discussions.	High
6	Zheng, X., Yin, H., Liu, Y.	Are professional learning communities beneficial for teachers? A multilevel analysis of teacher self-efficacy and commitment in China	2021	China	Quantitative: *survey*	1,203 teachers from 39 primary	Reflective dialogue significantly predicted self-efficacy. Shared purpose, collective focus on student learning, and reflective dialogue were positively associated with teacher commitment to students, whilst collaborative activity had a negative influence.	High
7	Zhang, J., Sun, Y.	Investigating the effects of professional learning communities on teacher commitment in China	2020	China	Quantitative: *survey*	1020 teachers in 31 schools in Shanghai	The organisational characteristics of PLCs which comprise supportive leadership, organisational structure and cultural barriers, had significant and positive effects on the individual characteristics of PLCs, i.e., collaborative inquiry and sharing and	Medium

							shared purpose and responsibility, which further significantly and positively predicted teacher commitment.	
8	Zhang, J., Yuan, R.	How can professional learning communities influence teachers' job satisfaction? A mixed-method study in China	2020	China	Quantitative: *survey*	488 teachers in 16 primary schools	The results show that the organisation-centric characteristics of PLCs, comprising supportive leadership, organisational structure and cultural barriers, have significant and positive effects on the teacher-centric characteristics of PLCs (i.e., collaborative inquiry and sharing and shared purpose and responsibility), which further significantly and positively predicted teacher job satisfaction.	High
9	Akinyemi, A.F., Rembe, S., Nkonki, V.	Trust and positive working relationships among teachers in communities of practice as an avenue for professional development	2020	South Africa	Mixed methods: *interviews; questionnaire*	79 participants from 10 high schools	The findings of the study show that teachers had good working relationships with their colleagues. The good working relationships they had enabled them to assist their colleagues, share their classroom challenges with them, confide in their colleagues, and they were able to get assistance from them. It was established from the study that a great number of teachers feel safe to be	High

							part of the communities of practice activities in the sampled high schools, thus, they engage in diverse of discussions with their colleagues and they were able to relate to their colleagues the difficulties they have in terms of their work. The study recommends that teachers should spend an adequate time in their meetings, see themselves as colleagues, interact as teams, and build strong ties to have good relationships and a strong level of trust among themselves.	
10	Chua, W.C., Thien, L.M., Lim, S.Y., Tan, C.S., Guan, T.E.	Unveiling the Practices and Challenges of Professional Learning Community in a Malaysian Chinese Secondary School	2020	Malaysia	Qualitative: *interview*	10 school administrators and 173 teachers	Findings informed three existing PLC practices at the school level, namely, (a) peer coaching, (b) sharing of personal practices, and (c) professional development courses. However, the practice of PLC encounters various challenges, including excessive workload, teachers' passive attitudes, unsupportive conditions in the school, poor execution of PLC by the school community, and a vague understanding of PLC. Interestingly, this study identified two uncovered challenges	High

							hindering the development of PLC: misconception about PLC and lack of supervision from the authority.	
11	Liu, S., Yin, H.	How ethical leadership influences professional learning communities via teacher obligation and participation in decision making: A moderated-mediation analysis	2020	China	Quantitative: *survey*	3374 teachers	The results from 3374 teachers revealed significant direct and indirect effects of ethical leadership on the professional learning communities via teacher obligation. Teacher participation in decision making significantly moderated the effects of ethical leadership on both teacher obligation and on the professional learning communities. The positive effects of principal ethical leadership were strengthened when teachers perceived high participation in school decision making.	High
12	Zhang, J., Yin, H., Wang, T.	Exploring the effects of professional learning communities on teacher's self-efficacy and job satisfaction in Shanghai, China	2020	China	Quantitative: *survey*	982 teachers	The results showed that PLCs in Shanghai China were characterised by both the teacher-centric and organisation-centric components. Two teacher-centric characteristics of PLCs, namely, collective inquiry and sharing and shared purpose and responsibility, significantly and positively affected teachers' self-efficacy and job	High

							satisfaction. For the organisation-centric characteristics of PLCs, supportive leadership significantly and positively predicted teachers' self-efficacy and job satisfaction, organisational structure significantly and positively predicted teachers' job satisfaction, and cultural barriers significantly and negatively predicted teachers' self-efficacy.	
13	Gonçalves, L.L., Parker, M., Luguetti, C., Carbinatto, M.	The facilitator's role in supporting physical education teachers' empowerment in a professional learning community	2020	Brazil	Qualitative: *observations & reflections from weekly meetings*	6 teachers of physical education	Three themes represented the facilitator's actions to support teachers' empowerment: (a) creating a horizontal relationship with teachers through dialogue; (b) understanding and respecting teachers' learning and (c) struggling with teachers in their reality as an act of solidarity. These facilitator actions contributed primarily to building a democratic space where the teachers could name, critique and negotiate the barriers they faced. Although creating spaces for teachers' empowerment provided the opportunity for improving teachers' PE knowledge, these spaces fundamentally supported	High

							teachers in seeking better professional conditions, organising themselves as a community and pursuing social change.	
14	Tahir, L.M., Musah, M.B.	Implementing professional learning community in rural Malaysian primary schools: Exploring teacher feedback	2020	Malaysia	Mixed methods: *interview, questionnaire*	338 rural primary teachers	The findings reveal that rural primary teachers feel contented with the PLC implementation within their schools. They note the benefits of the program as part of their effective professional development. Other benefits, such as the establishment of teachers' teamwork culture and the ability of the program to support teachers' learning process, were also addressed. PLC was also described as an effective knowledge-sharing platform. The findings also disclose some challenges such as lack of time, negative attitudes of teachers and financial constraints that impeded the effective execution of PLC at rural primary schools.	Medium
15	Ming, H.Z., Abdullah, Z., Komariah, A., Kurniady, D.A., Kurniatun,	Transformational leadership of headmasters and professional learning communities in primary schools, Manjung, Perak	2020	Malaysia	Quantitative: *survey*	351 primary school teachers	Principal transformational leadership is important in promoting PLCs in schools.	High

	T.C., Hakim, D.L., Thahir, M., Nurlatifah, S.							
16	Ismail, S.N., Abdullah, Z., Komariah, A., Kurniatun, T.C., Kurniady, D.A., Sunaengsih, C., Sanjaya, A.J.	Influence of the professional learning community of malay language teachers at the transformation school in Selangor	2020	Malaysia	Quantitative: *survey*	174 teachers	This study shows the levels of nine dimensions of PLC of Malay language teachers of School Transformation in Selangor. Generally, the level of PLC of Malay language teachers of School Transformation is at a high level. The Implementing of PLC practices requires commitment from all parties for school excellence.	Medium
17	Liang, W., Song, H., Sun, R.	Can a professional learning community facilitate teacher well-being in China? The mediating role of teaching self-efficacy	2020	China	Quantitative: *survey*	844 teachers from 28 schools in one province of south eastern China	PLC was positively related to teachers' hedonic and eudaimonic well-being. The association between the PLC and teacher well-being was confirmed to be mediated by teacher self-efficacy.	Medium
18	Hassan, R., Ahmad, J., Boon, Y.	Instructional leadership practice and professional learning community in the southern zone of Malaysia	2019	Malaysia	Quantitative: *survey*		Principal instructional leadership is positively linked with PLCs of teachers in their schools.	Medium

| 19 | Zhao, G., Yang, X., Long, T., Zhao, R. | Teachers' perceived professional development in a multi-regional community of practice: Effects of beliefs and engagement | 2019 | China | Quantitative: *survey* | 478 teachers from 39 schools | The regression analysis results indicated that teachers' beliefs about teaching thinking, followed by engagement in practice, engagement in learning, and acceptance of the CoP, were significant predictors to their perceived professional development. However, teachers' acceptance of the school culture was not a significant predictor. This study suggests that multi-regional CoPs could eliminate the barriers to teachers' professional development regarding the school culture. Schools should provide opportunities for teachers to engage in the practice, rather than one-shot training. | Medium |
| 20 | Zhu, J., Yao, J., Zhang, L. | Linking empowering leadership to innovative behavior in professional learning communities: the role of psychological empowerment and team psychological safety | 2019 | China | Quantitative: *survey* | 507 teachers from 114 teaching & research groups | The multilevel model results show that empowering leadership improves teachers' innovative behaviour in PLCs by increasing teachers' psychological empowerment, which is not influenced by team psychological safety. A supplementary analysis shows that the relationship between team psychological safety and teachers' | High |

							innovative behaviour is also mediated by psychological empowerment.	
21	Cheng, X., Pan, X.	English language teacher learning in professional learning communities: a case study of a Chinese secondary school	2019	China	Qualitative: *interview, observations of PLC meetings*	Teachers of a PLC in a secondary school	The study explores the discourse features of situated interactions in two types of typical events occurring regularly in this PLC, participant roles in the interactions, and how learning occurs in the community. It reveals that different foci and functions of the meetings largely determined the discourse features, and that community members tended to take different roles and demonstrate different aspects of their identity. Despite the differences, the two meetings both had a high percentage of episodes of pedagogical reasoning(EPRs) and low rate of distributed participation per episode. It is implied that both meetings were conducive to teacher learning, but the learning foci (topics covered in the two meetings) were different. More distributed participation may be needed to encourage collaborative learning.	High
22	Zhang, S., Liu, Q.	Investigating the relationships among	2019	China	Quantitative: *survey*	520 teachers	The results of regression analyses showed that teachers' perceived task	High

		teachers' motivational beliefs, motivational regulation, and their learning engagement in online professional learning communities					value positively predicted their online learning engagement. Moreover, teachers' motivational regulation played a partial mediating role in the predicting power of perceived task value to learning engagement. In addition, the first half of the mediating path among perceived task value, motivational regulation, and learning engagement was moderated by teachers' self-efficacy. The moderating effect on motivational regulation was higher for teachers with a high sense of self-efficacy than those with a low sense of self-efficacy. Therefore, it was suggested to assign learning tasks that meet the needs of teachers and pay attention to the cultivation of teachers' self-efficacy beliefs to increase their learning engagement in online professional learning communities.	
23	Wilburn, S.	The circulation of expertise in teachers' professional communities	2019	South Africa	Qualitative: *interview*	6 schools: principals, HODs, & teachers	Findings reveal significant differences between schools in the kinds of expertise that circulate in teacher communities. Remediation strategies that support student learning at specific	Medium

| | | | | | | | levels of complexity stand out as a significant form of expertise. In schools performing above demographic expectations, teachers have more opportunities to access knowledge as an instructional resource, enabled by the recognition of differences in expertise. The study offers insight into what kinds of pedagogic strategies might disrupt educational inequalities and support the quality of teaching and learning within a system of scarce resources. | |
| 24 | Dogan, S., Yurtseven, N., Tatık, R.Ş. | Meeting agenda matters: promoting reflective dialogue in teacher communities | 2019 | Turkey | Mixed methods: *observation* | 670 teachers from 43 schools in Istanbul, Turkey | There is an association between meeting agenda and emergence of reflective dialogue in teacher communities. The conversations on the goals of the school, curriculum, and student learning contributed to the evolution of reflective dialogue among teachers as these topics are more important. As teachers focus more on discussing these three topics, they begin reflecting on their practice through a collaborative dialogue. There are more topics that might promote reflective dialogue. Personal and institutional conditions have been | Medium |

							revealed as being necessary for creating culture of reflective dialogue.	
25	Luyten, H., Bazo, M.	Transformational leadership, professional learning communities, teacher learning and learner centred teaching practices; Evidence on their interrelations in Mozambican primary education	2019	Mozambique	Quantitative: *survey*	518 teachers in 95 Mozambican primary schools.	The effect of transformational leadership on teaching practices is substantial but indirect, running via professional learning communities and teacher learning. All in all, the impact of professional learning communities on teaching practices is particularly strong. Its effect is both direct and indirect, running via teacher learning. The findings show the relevance of the concepts transformational leadership and professional learning communities in an African context.	High
26	Prabjandee, D.	Unwelcome truths of the professional learning community policy in Thailand: Teacher's sensemaking	2019	Thailand	Quantitative: *survey*	217 secondary school teachers	Drawing on sensemaking theory and teacher agency, the data revealed a complicated process of sensemaking through an interplay between prior worldviews and sociocultural context. Within the limitations of policy implementation in the context, teachers exercise their agency to selectively implement some policy messages based on their students.	Medium

27	Woolway, J., Msimanga, A., Lelliott, A.	Continuous Collaborative Reflection Sessions in a Professional Learning Community: The Development of Grade 8 Natural Sciences Teachers' Reflective Practice	2019	South Africa	Qualitative: *teachers' reflective notes*	4 teachers from a high school	Results showed that, as teachers attended more sessions, so their participation and the level of their reflection increased. Teacher participation was dependent on a trusted environment. Inexperienced teachers were reliant on a leader with sound content and pedagogical knowledge guiding sessions. The importance of identifying motivated teachers to lead PLCs is highlighted.	Medium
28	Brodie, K.	Teacher agency in professional learning communities	2019	South Africa	Qualitative: *interview*	Teachers and school leaders from 12 schools	Data from interviews with teachers and principals are examined in relation to five key features of professional learning communities: focus, long-term inquiry, collaboration, leadership support and trust. Three forms of teacher agency emerged in relation to these features and contextual conditions: engaging with communities, abstaining from communities and rejecting communities. Each form of agency has different consequences for sustaining professional learning communities and teacher development.	High

| 29 | Walton, E., Carrington, S., Saggers, B., Edwards, C., Kimani, W. | What matters in learning communities for inclusive education: a cross-case analysis | 2019 | South Africa & Australia | Qualitative: *interview; observations (recorded meetings)* | 40 teachers in three schools in South Africa and Australia | In learning communities for inclusive education, responsiveness to contextual exigencies matters, expertise matters and supportive networks matter. These findings are further illuminated by complexity theory which draws attention to learning communities operating at the confluence of a number of interacting systems, as well as the possibility of change where teacher learning occurs through the re-contextualisation of knowledge and learning across boundaries. Our findings support situated learning that values collaboration to develop social and inclusive cultures and practice in schools. The findings also have the potential to inform planning for professional learning for inclusive education. | High |
| 30 | Akinyemi, A.F., Rembe, S., Shumba, J., Adewumi, T.M. | Collaboration and mutual support as processes established by communities of practice to improve continuing professional teachers' | 2019 | South Africa | Qualitative: *interview* | 15 participants: *3 teachers, 2 HODs, 3 cluster leaders, 2 subject advisors, & 1* | The study found that teachers participated effectively and had mutual relationship in collaborative learning activities in communities of practice. The findings indicated that teachers should collaborate and mutually engage | Medium |

		development in high schools				*education district official*	in learning activities in communities of practice in high schools in order to enhance their professional development.	
31	Özdemir, N.	Principal leaderhip and students' achievement: Mediated pathways of professional community and teachers' instructional practices	2019	Turkey	Quantitative: *survey*	36 schools: 75 math teachers and 2,894 students	Research findings underline that principals' leadership behaviours have indirect positive effects on students' math achievements with the mediating role of math teachers. Principals should recognize and enhance the improvement of teachers' shared responsibility and deprivatized practices to increase the quality of instruction and student achievement.	Medium
32	Moodley, M.	Whatsapp: Creating a virtual teacher community for supporting and monitoring after a professional development programme	2019	South Africa	Qualitative: *analysis of conversations on Whatsapp*	20 primary schools and three volunteer Foundation Phase teachers per school.	Effective use of an online social media network to support a virtual community of practice is dependent on the participants' awareness of the context within which the community exists and the willingness of the participants to accept differing views and opinions.	Medium
33	Akinyemi, A.F., Rembe, S., Shumba, J., Adewumi, T.M.	Allocation of time in communities of practice: A strategy to enhance continuing professional	2019	South Africa	Qualitative: *interviews, questionnaires*	10 high schools	Findings revealed that time allocated for communities of practice are limited which do not enable teachers to have opportunity to learn as a team. The study concluded that teachers do not	Medium

#	Author	Title	Year	Country	Method	Sample	Results	
		teachers' development of high schools teachers'					have sufficient time to engage in collaborative learning activities. It is recommended that teachers should spend adequate time for learning activities in communities of practice. Regular and fixed time should be allocated for communities of practice such that teachers will have enough time to collaborate. Teachers should meet at least once in a week for a minimum of 1 hour in schools for communities of practice.	
34	Zhang, J., Sun, Y.	Development of a conceptual model for understanding professional learning communities in China: a mixed-method study	2018	China	Mixed methods: *interviews, questionnaire*	Qualitative - interviews of 12 teachers from 10 schools Quantitative - convenience sample of 1067 teachers in 31 schools	Results show that rooted in the Chinese institutional (i.e., the accountability system and the Teaching Research System) and cultural (i.e., the collective and harmonious culture) context, PLCs in China could be operationalized in terms of eight characteristics at two levels, including collective inquiry and sharing, shared purpose and responsibility, informal collaborative learning, supportive leadership, organizational structure, collaborative relationship, institutional barriers, and cultural barriers.	High

35	Yin, H., Zheng, X.	Facilitating professional learning communities in China: Do leadership practices and faculty trust matter?	2018	China	Quantitative: *survey*	1,095 primary school teachers	The results showed that leadership practices had positive effects on faculty trust and professional learning communities. They further showed that trust in colleagues positively, whereas trust in the principal negatively, mediated the relationships between leadership practices and four components of professional learning communities. The negative mediation of trust in the principal may be attributed to Chinese cultural and contextual circumstances.	High
36	Mu, G.M., Liang, W., Lu, L., Huang, D.	Building Pedagogical Content Knowledge within Professional Learning Communities: An approach to counteracting regional education inequality	2018	China	Quantitative: *survey*	10,202 teachers	Participation in teaching and research activities within PLCs benefits teachers' pedagogical content knowledge. Building pedagogical content knowledge through the Teaching and Research System has potential to counteract regional education inequality.	High
37	Zhang, X., Wong, J.L.N.	How do teachers learn together? A study of school-based teacher learning in China from	2018	China	Qualitative: *interviews; field notes of collective lesson preparation,*	17 teachers from two PLCs in a secondary school	The two group teachers had actively developed implementation-oriented and experimentation -oriented processes of learning. The former process is referred to as exploitation learning. Exploitation	High

		the perspective of organisational learning			*lesson observation and critique, seminars and action-research conferences*		learning helps teachers by creating a stable environment to learn the existing knowledge and norms of practice of a school organisation. The latter process is referred to as exploration learning. Exploration or exploratory learning provides a platform for new knowledge construction aimed at improving existing practices in a more radical way. Teachers' perceptions of and participation in school-based learning activities shape their learning experiences in different ways. Specifically, the support of school leaders is necessary to promote teachers' exploratory learning in school-based settings. However, the leadership strategies that best support teachers' learning require further investigation.	
38	Chauraya, M., Brodie, K.	Conversations in a professional learning community: An analysis of teacher learning opportunities in mathematics	2018	South Africa	Qualitative: *audio-recorded community conversations*	5 mathematics teachers	Our analyses show how opportunities for learning were created in identifying the origins of learners' errors as well as learners' thinking underlying their errors.	Medium

							Results also showed that the teachers had opportunities for learning how to identify learners' learning needs and in turn the teachers' own learning needs. The teachers also had opportunities for deepening their own understanding of the conceptual meaning of ratio. The learning opportunities were supported by the following: having a learning focus, patterns of engagement that were characterised by facilitator questioning, teacher responses and explanations, and sharing knowledge. Such mutual engagement practices in professional learning communities resulted in new and shared meanings about teachers' classroom practices. Our findings also show the critical role of a facilitator for teacher learning in professional learning communities.	
39	Khalid, F.	Understanding the dimensions of identities and its impact upon member's participation in	2018	Malaysia	Qualitative: *interview*	16 teachers from 6 secondary schools	Overall, there are seven factors seen as 'immediate' causes leading to the final outcome (participation in online CoPs), i.e., beliefs in the benefits of informal sharing activities, perceived importance	Medium

		an online community of practice					of online sharing activities, perceived role in community, willingness to initiate discussions, willingness to respond, acceptance towards others' comments, and beliefs in the benefits of online communities. The findings indicate that different individuals had different sharing preferences, and the differences were partly driven by how they conceived of professional development as well as how they perceived themselves professionally.	
40	Zonoubi, R., Eslami Rasekh, A., Tavakoli, M.	EFL teacher self-efficacy development in professional learning communities	2017	Iran	Qualitative: *pre and post-interviews, reflective journals, and recordings of the PLC meetings*	10 English as a Foreign Language (EFL) novice and experienced teachers	The findings suggest that the experienced teachers' self-efficacy improved in terms of employing innovative instructional strategies and language proficiency. An increase was also observed in the novice teachers' self-efficacy for classroom management, their autonomy, and their perceived language proficiency. Finally, the participants in both groups developed a stronger sense of professional community membership as	High

						reflected in their focus on their collective efficacy toward the end of the PLCs.	
41	Somprach, K., Tang, K.N., Popoonsak, P.	The relationship between school leadership and professional learning communities in Thai basic education schools	2017	Thailand	Quantitative: survey	731 respondents	The findings indicate that school principals are highly involved in practicing the nine leadership styles and teachers were also greatly participating in PLCs. Teachers' participation in PLCs was significantly related to the nine leadership styles at significance level of 0.05. The results also show that there were four significant predictors, namely learning, transformational, collaborative, and invitational leadership, which together contributed 55.6 % of the variance in teachers' participation in PLCs.	High
42	Bellibas, M.S., Bulut, O., Gedik, S.	Investigating professional learning communities in Turkish schools: the effects of contextual factors	2017	Turkey	Quantitative: survey	492 teachers and school leaders	School staff had a culture of sharing and collaboration, but suffered from a lack of material and human resources required for supporting effective learning communities. The experience of the staff, as well as the size and socioeconomic status of the school, appeared to be the most important factors in predicting the variation in the	High

							available professional learning communities.	
43	Kempen, M.E., Steyn, G.M.	An Investigation of Teachers' Collaborative Learning in a Continuous Professional Development Programme in South African Special Schools	2017	South Africa	Qualitative: *interview; focus group interviews; observations; photographs*	6 special needs schools in Gauteng; local stakeholders	The study proved that a staff development model based on collaborative networking in the specific context of special education can bring about significant social capital with gain particularly in teachers' professional capacity, learner outcomes and whole school improvement.	High
44	Zhang, J., Yuan, R., Yu, S.	What impedes the development of professional learning communities in China? Perceptions from leaders and frontline teachers in three schools in Shanghai	2017	China	Qualitative: *interview*	18 schools in three high schools	Results indicate that the barriers identified by teachers in the development of PLCs include insufficient collaborative time, ineffective school leadership, unfavourable accountability policy, and lack of collaborative professional culture. By contrast, school leaders regard the absence of financial power, passive teachers, an unfavourable accountability system, and shortage of external resources as the major impediments to PLCs.	High
45	Chauraya, M., Brodie, K.	Learning in professional learning communities:	2017	South Africa	Quantitative: *video-recorded lessons*	5 Mathematics teachers in one township high	The results show that two teachers made modest shifts in three of the five key dimensions of their lessons and one of	High

		Shifts in mathematics teachers' practices				school in Johannesburg	the two teachers sustained these shifts. The two other teachers did not make major shifts in their teaching. The shifts are linked to learning activities in the professional learning community, which involved the teachers in conversations about learners' errors and learners' learning needs, and designing lessons to address these needs. Findings from the study indicate how teacher-learning activities in a professional learning community can support shifts in teachers' teaching and explain why changes differ among teachers.	
46	Dogan, S., Şamil Tatık, R., Yurtseven, N.	Professional learning communities assessment: Adaptation, internal validity, and multidimensional model testing in turkish context	2017	Turkey	Quantitative	719 teachers from schools in Istanbul	Organizational capacity is a statistically significant predictor for interpersonal capacities. However, professional development, as a personal capacity, was not a statistically significant mediator of this relationship in the model.	High
47	Alam, A., Ahmad, M.	The impact of instructional leadership, professional communities and extra responsibilities for	2017	Pakistan	Quantitative: *survey*	214 teachers from 88 primary schools	Teacher commitment mediates the relationships between professional communities and student achievement.	High

		teachers on student achievement						
48	Wang, D., Wang, J., Li, H., Li, L.	School context and instructional capacity: A comparative study of professional learning communities in rural and urban schools in China	2017	China	Qualitative: *interviews*	36 primary school teachers	The study finds striking disparities between rural and urban schools in the working of Teaching and Research Groups (TRGs). These disparities in TRGs result in divergent patterns of instructional capacity building in rural and urban schools. The evidence shows that teaching and teachers are strongly shaped by the school organizational context. It suggests that strengthening school-wide PLCs is an important way of narrowing the rural-urban teaching and learning gaps.	High
49	Kalkan, F.	Relationship between professional learning community, bureaucratic structure and organisational trust in primary education schools	2016	Turkey	Quantitative: *survey*	805 primary school teachers	Research results indicated that relationships exist between professional learning community, bureaucratic structure and organizational trust. Moreover, organisational trust is a partial mediating variable in the relationship between professional learning community and bureaucratic structure.	Medium

50	Cheng, X., Wu, L.-Y.	The affordances of teacher professional learning communities: A case study of a Chinese secondary school	2016	China	Qualitative: *interview, observation*	5 teachers	Social and individual affordances are both essential to individual teachers' professional development, and to the sustainable growth of the teacher learning community (TLC). The former is prerequisite to the latter, whereas the latter determines the route and pace of development.	High
51	Zhang, J., Sun-Keung Pang, N.	Investigating the development of professional learning communities: compare schools in Shanghai and Southwest China	2016	China	Quantitative: *survey*	324 teachers in 13 schools from Shanghai and Mianyang	The study suggests that the practices of PLCs in Chinese schools include collaborative learning, professional competency, facilitative leadership, structural support, and organizational barriers, which are largely shaped by the historical, institutional, and cultural factors within the Chinese context. The findings also show that teachers of Mianyang perceived their schools having better development of PLCs, compared with their counterparts in Shanghai, in the areas of collaborative learning and facilitative leadership. These findings could be explained by the regional, educational economic, social, and cultural disparities.	High

52	Lin, X., Hu, X., Hu, Q., Liu, Z.	A social network analysis of teaching and research collaboration in a teachers' virtual learning community	2016	China	Mixed methods: *content analysis, questionnaires, focus group interviews*	172 teachers	These findings suggest that face-to-face and online collaborations are both indispensable in teaching and in research and continuously supplement and remedy each other in professional development. Moreover, the model succeeded in accessing, describing and analysing the social network structure of a VLC.	High
53	Nambiar, R.M.K., Thang, S.M.	Examining Malaysian teachers' online blogs for reflective practices: towards teacher professional development	2016	Malaysia	Mixed methods: *blogs and focus groups*	15 teachers of mathematics, science and English from three Smart Schools within the Klang Valley in Malaysia	The findings demonstrate that using blogs generated reflective practices to a certain extent in allowing teachers to express their thoughts, share their doubts and struggles in teaching, and manage learners. However, it is not possible to conclude that blogging contributed to teachers' professional development.	Medium
54	Qiao, X., Yu, S.	Enhancing professional learning communities through knowledge artefacts in mainland China	2016	China	Qualitative	7 Chinese primary teachers	The findings highlight the lack of trial-and-error opportunities and teacher motivation in conducting professional dialogues in situated collective learning settings. The study suggests that stimulating teacher agency must be employed in the development of	Medium

							teaching practice under the scaffolds of knowledge artefacts.	
55	Sargent, T.C.	Professional learning communities and the diffusion of pedagogical innovation in the Chinese education system	2015	China	Quantitative: *survey*	192 schools and 2,241 teachers	Despite teachers' pessimistic attitudes about the viability of reform success in the face of the examination system, innovative ideas about pedagogy diffuse successfully throughout the education system as a result of frequent opportunities for teachers to interact and observe each other teaching in school-level professional learning communities, and as a result of the cultivation of cosmopolitan external networks for officially designated near-peer teacher opinion leaders.	High
56	Khalid, F., Joyes, G., Ellison, L., Daud, M.Y.	Factors influencing teachers' level of participation in online communities	2014	Malaysia	Qualitative: *interviews*	16 teachers from 5 secondary schools	The overall findings indicate that teachers' levels of participation in their online learning communities were largely influenced by cultural issues. Other factors that impacted upon their engagement were time, enforcement by school administrators and their need for an online community.	High
57	Steyn, G.M.	Holding the reigns to demonstrate the key features of a teacher	2014	South Africa	Qualitative: *interview*	1 school principal	The findings in the study showed that the principal undertook to create teacher collaboration in the school and to	High

		learning community in a South African school					revitalise teachers' passion for professional learning. Although teachers initially felt uncomfortable about collaboration, they were eventually convinced about the advantages of working collaboratively with their peers. The principal introduced both horizontal and vertical teams to ensure professional learning, continuity and communication. By doing this, he successfully created an appropriate context in which teachers shared their teaching practices. Their professional relationships also extended to personal relationships.	
58	Rolando, L.G.R., Salvador, D.F., Souza, A.H.S., Luz, M.R.M.P.	Learning with their peers: Using a virtual learning community to improve an in-service Biology teacher education program in Brazil	2014	Brazil	Mixed methods: *questionnaires, images, links, videos, texts, etc.*	Not explicitly defined	Virtual Learning Community - Biology (VLC-Bio) enabled the sharing of biological knowledge, teaching methods and didactic resources. Although they presented a limited initial profile of internet use directed to socialization, the results indicated that participation in the VLC-Bio focused internet use for teaching and learning purposes. The VLC-Bio offered opportunities to develop the ability to	High

							learn from their peers about how to deal with matters of difficult approach in everyday school life, as well as of sharing resources for Biology education that are frequently lacking.	
59	Brodie, K.	Learning about learner errors in professional learning communities	2014	South Africa	Qualitative	Teachers worked in small grade level groups	I have argued that a professional learning community can be a mechanism for supporting teachers to challenge fundamental assumptions about how they work with learner errors and to grow towards interpreting and engaging with learner errors and their own knowledge. The key features of professional learning communities—enquiry, collectivity, safety and challenge—supported the teachers' growth.	High
60	Khalid, F., Joyes, G., Ellison, L., Karim, A.	Teachers' involvement in communities of practice: An implication with regard to the current approach of teachers' professional development in Malaysia	2013	Malaysia	Qualitative: *interviews*	16 teachers from 5 schools	Teachers value their involvement in CoPs in their schools as a significant source for them to improve on their teaching-related skills. It shows how important the informal approach as part of teachers' professional development is for them. Engagement in such informal learning with each other as happened in their current CoPs in their schools, for	Medium

							example their subject panel or form teachers' group, enabled the teachers to update their knowledge and to contribute to the general level of knowledge through sharing their own experiences with others (Palinscar, 1999).	
61	Vandeyar, T.	Practice as policy in ICT for education: Catalysing communities of practice in education in South Africa	2013	South Africa	Qualitative: *interviews, classroom observations, researcher journal, field notes, document reviews and informal conversational*	3 primary urban schools from different socio economic backgrounds were chosen	This study found that teachers were disillusioned by the lack of policy and adequate policy guidelines. Furthermore district officials seemed to lack both capacity and competence to provide ICT-integration and policy support to teachers. Initially, schools seemed to operate in vacuums by implementing their own ICT practice as policy. Communities of practice thus became the panacea to address the needs of schools for ICT integration, support and collaboration. Furthermore communities of practice tend to nurture practitioners' situated learning which enhances their pedagogy and ultimately influences policy in practice.	High
62	El-Hani, C.N., Greca, I.M.	ComPratica: A Virtual Community of Practice	2013	Brazil	Qualitative	87 PLC members	ComPratica is effectively functioning as a community of practice and is leading	High

		for Promoting Biology Teachers' Professional Development in Brazil					to changes related to both teachers' and researchers' professional development, which seem capable of reducing the research–practice gap in science education.	
63	Younger, M., George, P.	Developing communities of practice in practice: overcoming suspicion and establishing dialogue amongst primary school teachers in Antigua and Barbuda	2013	Antigua & Barbuda	Qualitative: *individual interviews and focus group interviews*	7 government primary schools	Despite the initial unease about the difficulties of generating communities of practice in practice, there is significant support for the idea in primary schools in Antigua, and evidence that some significant steps are being taken in some schools, to develop the idea in practice. To bring these communities to fruition, so that there is a sharp and continuing focus on student learning and enhanced motivation and achievement, there needs to be space, time and patience for sharing the innovative and transformative practice being developed by some teachers and principals	High
64	Hunuk, D., Ince, M.L., Tannehill, D.	Developing teachers' health-related fitness knowledge through a community of practice:	2013	Turkey	Mixed methods: *interviews, researcher field notes, and audio taped and fully*	12 physical education teachers, and 278 of their students	Findings indicated that teacher participation in a CoP changed their teaching practices and teaching culture by focusing on their students' needs, increased their engagement in physical	Medium

		Impact on student learning			*transcribed text of six week PLC*		education and triggered continued learning toward personal professional needs. In conclusion, this study indicates that a CoP based on teachers' specific needs increased their students' learning and changed teachers' teaching culture positively.	
65	Murugaiah, P., Ming, T.S., Azman, H., Nambiar, R.	Is presence of community of practice dimensions sufficient for community-based teacher professional development?	2013	Malaysia	Qualitative: *analysis of blogs posed by teachers over a period of 5 months, and focus group interviews*	5 participants in the English cohort	The study has shown that although the mutual engagement, joint enterprise and shared repertoire dimensions must be present in CoPs, their mere presence is not sufficient for CoP-based teacher professional development. It further provides significant insights into problems that need to be overcome if efforts to cultivate CoPs as a professional development strategy in a multicultural country with a collective society like Malaysia were to be pursued. Hence, the problems identified [e.g. power relationship] should be employed as guiding principles towards the development of CoPs and not to be used as a pretext to abandon them.	High

| 66 | Murugaiah, P., Azman, H., Thang, S.M., Krish, P. | Teacher learning via communities of practice: A Malaysian case study | 2012 | Malaysia | Qualitative: *blog entries, and content analysis* | 5 teachers | The interactions in the English cohort indicate that cognitive presence was evident albeit only to a small extent. It implied that teacher interactions need to be enhanced to feature more two-way interactions depicting deep learning. To achieve this, trust must be built among participants. They must have trust in themselves, their peers, the communication tool and the community as a whole. ...More importantly, the socio-cultural factors have to be taken into account to ensure greater extent of teacher learning. For a start, instead of attempting to overcome the deepseated socio-cultural issues (e.g., an examination-centered education system, a top–down hierarchical structure), it would be more fitting to work within the confi nes of the cultural norms in order to utilize the issues to promote teacher learning endeavors. | High |
| 67 | Rahman, S.M.H. | Influence of professional learning community (PLC) on learning a constructivist teaching | 2012 | Bangladesh | Qualitative | 14 science teachers | The findings of this research revealed that participant teachers found it difficult to set challenging goals and to use hands-on teaching methods that | High |

		approach (POE): A case of secondary science teachers in Bangladesh					involved collaborative activities with others. However, through using the POE and collaborating with colleagues they found themselves much more confident in developing and using hands on activities. The collaborative activities empowered them to share, which expanded their capacity to develop a personal vision for their own teaching practice.	
68	Song, H.	The role of teachers' professional learning communities in the context of curriculum reform in high schools	2012	China	Quantitative: survey	1,611 teachers from 32 high schools	Establishment of a PLC can help teachers feel more empowered; make teachers more receptive to the new high school curriculum reforms by promoting managing the change at school; and influence teachers' perceptions of the value of the reforms by helping them feel more empowered, thus making them more receptive to reforms.	Medium
69	Rahman, S.M.H.	Influence of professional learning community (PLC) on secondary science teachers' culture of professional practice: The case of Bangladesh	2011	Bangladesh	Qualitative	14 science teachers	The results indicate that the post teaching discussions and professional workshops offered participating teachers opportunities to discuss their problems regarding resources, content	High

							knowledge, pedagogy and the learning environment in the classroom.	
70	Maistry, S.	Using cultural capital as a resource for negotiating participation in a teacher community of practice: A case study	2010	South Africa	Qualitative: *interviews, field notes, and class observations*	1 teacher	It argues that teachers have various forms of capital that they constantly draw on to negotiate the different facets of their lives as teachers. CPD initiatives in South Africa can certainly benefit from the richness of experience that teachers bring to the programmes, if they are sufficiently alert and sensitive to the clientele they service.	High