A significant systematic review: impact of school head leadership competencies on teacher development

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Article Info	ABSTRACT
	This article critically examines the impact of school head leadership competencies on teacher continuous professional development (CPD). Utilizing the Preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines, a comprehensive search analyze 1,041 English-language publications from 2020 to 2024 taken from the Scopus, Web of Science and Eric databases. These articles collectively underscore the transformative role of leadership in cultivating professional learning community (PLC) enhancing teacher outcomes and spearheading innovative approaches to CPD. The data were collected, reviewed, and underwent a peer-review process before a systematic review. This article synthesizes findings from final articles (n=29) into three main themes: leadership and PLCs, effects of PLCs on teacher outcomes, and innovative approaches to CPD. These themes facilitate not only the CPD of teachers but also contribute to the overall educational environment by fostering collaboration, innovation, and resilience to changes in educational standards and practices. The findings reveal that effective leadership competencies are instrumental in promoting a culture of CPD among teachers. The evidence suggests a compelling link between school head leadership competencies and significant advancements in teacher CPD. This review provides valuable insights for educational policymakers, school administrators and scholars, emphasizing the critical needs for targeted leadership training programs that enhance the efficacy of CPD initiatives. *This is an open access article under the CC BY-SA license.*

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1. INTRODUCTION

In the rapidly evolving landscape of education, the role of leadership has become increasingly pivotal. School heads, often at the helm of educational institutions, play a crucial role in steering the direction and quality of teaching and learning [1], [2]. Their leadership competencies significantly impact not only the administrative and operational facets of schools but also the continuous professional development (CPD) of teachers. This article seeks to explore the intricate relationship between school head leadership competencies and the CPD of teachers, highlighting how effective leadership can foster an environment conducive to continuous learning and professional development. The concept of leadership in education has undergone significant transformation over the past few decades [3]. Traditional models of top-down management have given way to more collaborative and inclusive approaches. In this context, the competencies of school heads

including encompassing skills, knowledge, and attitudes, are critical in shaping the professional development of teachers. Leadership competencies such as vision setting, instructional leadership, emotional intelligence and the ability to foster a positive school culture are now recognized as essential for promoting effective teaching practices and CPD [4]–[6].

CPD is a cornerstone of educational excellence. It involves ongoing, intentional learning aimed at improving teachers' professional knowledge [7], skills [8], and attitudes [9]. Effective CPD is not a one-time event but a sustained process that is integral to teachers' careers. It ensures that educators remain current with new teaching strategies, technological advancements, and evolving educational standards. The leadership competencies of school heads is a determining factor in the success of CPD programs. Leaders who prioritize and support CPD create an environment where teachers are motivated to engage in lifelong learning [10]. Research indicates that school head leadership competencies are closely linked to the success of CPD initiatives [11]. For instance, leaders who demonstrate strong instructional leadership can guide and support teachers in implementing effective teaching strategies. Those with high emotional intelligence can foster a supportive and collaborative school culture, encouraging teachers to share knowledge and learn from one another. Moreover, school heads who are adept at vision setting can align CPD efforts with the broader goals of the institution, ensuring coherence and relevance in professional development activities.

The impact of school head leadership competencies on teacher CPD is multi-faceted. Firstly, effective leaders serve as role models [12], exemplifying the importance of professional development [13] and setting high standards for their teacher [14]. Secondly, they provide the necessary resources and opportunities for CPD, such as access to training programs, workshops, and collaborative learning communities [15], [16]. Thirdly, they create an environment that values and encourages innovation and experimentation in teaching practices [17], [18]. This supportive climate is crucial for teachers to feel confident in pursuing new methods and approaches to enhance their teaching [19]. Despite the recognized importance of leadership in fostering CPD, there remains a need for more empirical research to understand the specific competencies that most effectively promote teacher development. This article aims to fill this gap by systematically reviewing existing literature on the subject. By identifying key leadership competencies and examining their impact on CPD, this study will provide valuable insights for educational leaders, policymakers, and practitioners.

In response to the issue of how school head leadership competencies affect teacher CPD, new research emphasizes how important it is for school heads as leader to constantly improve their leadership competencies to meet teacher CPD demands and improve school achievement. Tai and Kareem [20] highlight that headteachers in Malaysian primary schools must be equipped with the relevant competencies to execute school change, in the light of increasing demands for educational excellence and ensuing school reforms and teacher CPD is one of the main focuses. Similarly, Satata *et al.* [21] discuss the significance of leadership competencies in offering chances for CPD stating that the principal's leadership has a positive and significant effect on teacher performance. These results highlight the crucial part that school head leadership competencies play in creating an atmosphere where teachers can learn new skills, gain confidence, and eventually improve the standard of teaching by involving in CPD. The issue is reorganizing school policies and practices by school heads to provide these opportunities for further learning while ensuring that teachers have access to the resources they require for professional development.

In conclusion, the leadership competencies of school heads are instrumental in shaping the continuous professional development of teachers. As the demands on educators continue to evolve, effective leadership will be critical in ensuring that teachers are well-equipped to meet these challenges. By fostering a culture of continuous learning and professional development, school heads can significantly enhance the quality of education and ultimately improve student outcomes [22]. This article contributes to the ongoing discourse on educational leadership by highlighting the critical role of school head competencies in promoting teacher CPD, offering evidence-based recommendations for practice and policy. Therefore, through exploration and understanding of various research perspectives, this study aims to answer three main research questions (RQ) as:

i)   RQ1: How do leadership styles and structures influence the effectiveness and sustainability of professional learning communities (PLCs) in schools?
ii) RQ2: What are the impacts of participation in professional learning communities on teachers' job satisfaction, self-efficacy, and professional development?
iii) RQ3: How are innovative methods and technologies shaping the landscape of professional development for teachers?

2.   METHOD

The authors begin this section with a discussion of the preferred reporting items for systematic reviews and meta-analyses (PRISMA) publication standard. The authors then explain in depth on how the research questions were developed, the identification, screening, and eligibility methods of systematic

searching they used, how to evaluate their quality, and how to extract and analyze data. This approach ensures a comprehensive and transparent review process, aligning with best practices in systematic research. Additionally, the authors detail the criteria for including and excluding studies, which helps maintain the integrity and relevance of the review.

2.1. Preferred reporting items for systematic reviews and meta-analyses

This significant review was guided by the PRISMA publication standard. PRISMA helps authors identify inclusion and exclusion criteria, create research question which facilitate systematic reviews, and try to navigate through a significant number of research [23]. In the present situation, the authors' extensive keyword searches on the impact of leadership competencies of school heads were directed by PRISMA. Then, authors classified the data to see its impact in teacher CPD.

2.2. Formulation of research questions

As it will guide the systematic review technique, the study must first identify a relevant research topic. Since the main objective of this study was to provide a comprehensive, in-depth analysis of the present state of the literature on the impact of school heads' leadership competencies on teacher CPD, the following research questions were selected: i) How do leadership styles and structures influence the effectiveness and sustainability of PLCs in schools?; ii) What are the impacts of participation in PLCs on teachers' job satisfaction, self-efficacy, and professional development?; iii) How are innovative methods and technologies shaping the landscape of professional development for teachers? The article's emphasis changed from a leadership competencies of school heads on teacher CPD to improve school and student achievement after the research question was defined.

2.3. Systematic searching strategy

Three systematic processes of eligibility, screening, and identification were implemented to retrieve relevant articles from the selected databases. These processes were meticulously designed to ensure the inclusion of high-quality studies that met the predefined criteria. The eligibility criteria were based on the relevance to the research questions and the robustness of the study methodologies. During the screening phase, abstracts and full texts were reviewed to filter out studies that did not meet the inclusion criteria. The identification process involved the use of specific keywords and search strings to capture all pertinent literature.

2.3.1. Identification

The process of identification is employed to enhance the main keywords. This is significant since the identification process increases the probability that additional relevant research will be located for the review. Following the selection of a few keywords, related terms are located by searching dictionaries, thesaurus, encyclopedias, and previous research. Following the development of the search strings for the databases of Scopus, Web of Sciences (WoS), and ERIC, all relevant phrases were chosen as shown in Table 1. For the current study, 1,041 papers were successfully collected from the databases in the first stage of the systematic review approach.

Table 1. The search string used for the systematic review process

Database	Search string
Scopus	TITLE-ABS-KEY (leadership AND (competencies OR skills OR characteristics) AND ("continuous professional development" OR cpd OR "professional learning community" OR "teacher development")) AND PUBYEAR>2019 AND PUBYEAR<2025 AND (LIMIT-TO (SUBAREA, "SOCI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (PUBSTAGE, "final")) Date of access: June 2024
WoS	leadership AND (competencies OR skills OR characteristics) AND ("continuous professional development" OR cpd OR "professional learning community" OR "teacher development") (Topic) and 2024 or 2023 or 2022 or 2021 or 2020 (Final Publication Year) and Article (Document Types) and English (Languages) Date of access: June 2024
Eric	leadership AND (competencies OR skills OR characteristics) AND ("continuous professional development" OR cpd OR "professional learning community" OR "teacher development") Date of access: June 2024

2.3.2. Screening

Ensuring that the materials that are obtained for a potentially relevant study are appropriate for the chosen research topic is the aim of the screening process. A frequent content-related criterion employed in the screening process involves categorizing research materials according to the impact of school heads'

leadership competencies towards teacher CPD. The list of papers that were searched during this phase will be reviewed to remove any duplicates. After 846 publications were eliminated in the first screening stage, 195 publications were selected for review in the second screening stage as shown in Table 2 based on the investigation's exclusion and inclusion criteria.

Table 2. The inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	Between 2020-2024	2019 and earlier
Literature type	Journal (Research article)	Journals (Systematic review), book series, book, chapter in book, proceeding
Publication stage	Final	In Press

2.3.3. Eligibility

The third step, the eligibility phase, is prepared with 153 items. At this stage, each article's title and key points were carefully reviewed to ensure they matched the study's objectives and inclusion criteria. Consequently, 126 articles were excluded because they were either out of context, their full text access articles lacked empirical support, or their titles had nothing to do with the study's objectives. Finally, 27 articles are available for review as shown in Figure 1.
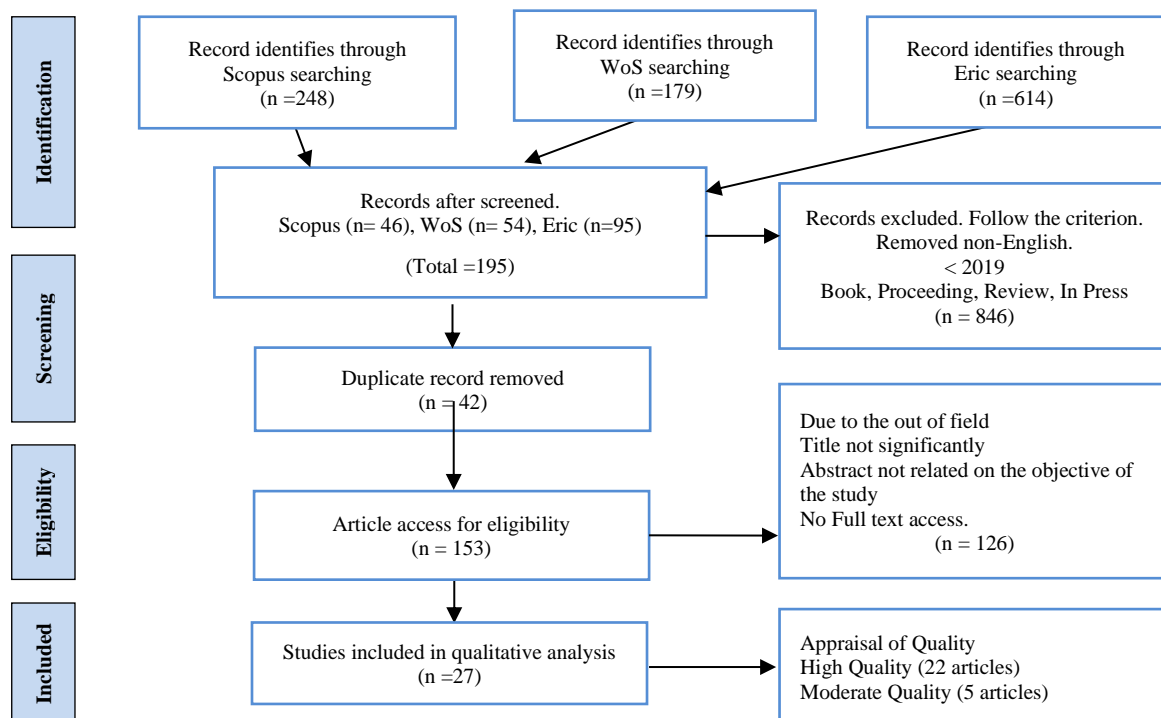
Figure 1. Flow diagram of the proposed searching study [24]

2.4. Appraisal of quality

Due to the mixed study designs (qualitative + quantitative + mixed methods) that formed the basis of the review, the quality of the chosen articles was assessed using the mixed method appraisal tool (MMAT) version 2018 [25]. A pair of reviewers were given the task with evaluating the quality of the selected articles by considering factors such as the suitability of the method of statistical analysis employed to achieve the objective, the clarity of the research questions, and the level of confidence in the assessment of the research question. The MMAT were used to assess the articles' quality; 25% were low-quality, 50% were considered medium quality, 75% were considered above average, and 100% were considered high-quality. The reviewers then categorized 22 articles as having high average quality while the remaining 5 were above average.

2.5. Data abstraction and analysis

One of the evaluation procedures employed in this study was an integrative analysis, which merged and analyzed various research kinds utilizing quantitative approaches. The process of developing a theme began with the first round of data collection. The authors' thorough analysis is depicted in Figure 1, which includes an organized evaluation of 27 publications to extract assertions or content relevant to the study's main issues. The authors then evaluated the significant research of school heads leadership competencies' effect on teacher CPD. The author then developed the themes that included components specific to the study context. Throughout the data analysis process, a log was kept recording analyses, suggestions, challenges, and other ideas relevant to the interpretation of the data. To search for variations in the topic development process, the authors cross-referenced the results of the previous phase. To ensure cohesiveness, the resulting themes were refined. Two professionals with expertise in the related fields were included in the selection process to verify the concerns and ensure the analysis's quality. The domain validity was established through the expert review phase, which also ensured that each subtheme was relevant, appropriate, and clear.

3. RESULTS AND DISCUSSION

The review resulted in the identification of three main themes related to the effect of school heads leadership competencies towards teacher CPD. The three main themes were leadership and PLCs (Theme 1); effects of PLCs on teacher outcomes (Theme 2); and innovative approaches to professional development (Theme 3). The three main themes that were identified from the 27 articles in this research are summarized in Tables 3-5.

3.1. General background of the selected studies

Regarding the topic of the selected research, four studies examined the leadership competencies of China school heads in managing teacher CPD [26]–[29], three studies concentrated on Malaysia [30]–[32], two studies on Africa [33], [34], Israel [35], [36], Norway [37], [38], Estonia [39], [40] and Netherlands [41], [42] and one study on Chile [43], Rwanda [44], German [45], Jordan [46], Ireland [47], Vietnam [48], Cameroon [49], Pakistan [50], Spain [51], and Turkey [52]. Moreover, there were eight quantitative research studies, 14 qualitative research studies and five mixed methods (qualitative and quantitative) studies selected for the review.

Table 3. A simplified table of studies included in the systematic review for Theme 1

No.	Authors	Title	Year
1	Galdames-Calderón [43]	Distributed leadership: School principals' practices to promote teachers' professional development for school improvement	2023
2	Tahir et al. [30]	Principals' views on continuing professional development programmes: Evidence from Malaysia	2023
3	Avidov-Ungar et al. [36]	Role perceptions of early childhood teachers leading PLCs following a new professional development policy	2023
4	Poom-Valickis et al. [39]	Creating and developing a collaborative and learning-centred school culture: Views of Estonian school leaders	2022
5	Faizuddin et al. [31]	Continuous professional development programmes for school principals in the 21st century: Lessons learned from educational leadership practices	2022
6	Ismail et al. [32]	The impact of headmaster distributive leadership towards PLCs	2022
7	Chabalala and Naidoo [33]	Teachers' and middle managers' experiences of principals' instructional leadership towards improving curriculum delivery in schools	2021
8	Strand and Emstad [38]	Developing leadership by participating in principal professional learning communities (PPLCS) and the added value of transnational collaboration	2020
9	Uworwabayeho et al. [44]	Developing the capacity of education local leaders for sustaining PLCs in Rwanda	2020
10	Valckx et al. [45]	Departmental PLCs in secondary schools: the importance of transformational leadership, teacher autonomy, and teachers' self-efficacy	2020

Table 4. A simplified table of studies included in the systematic review for Theme 2

No.	Authors	Title	Year
1	Zheng and Luo [26]	How do departmental PLCs and teacher leadership matter for teacher self-efficacy? A multi-level analysis	2024
2	Khasawneh et al. [46]	An examination of teacher collaboration in PLCs and collaborative teaching practices	2023
3	Zhang, et al. [27]	Exploring the effects of PLCs on teacher's self-efficacy and job satisfaction in Shanghai, China	2023
4	Huijboom et al. [42]	PLCs as learning environments for teachers: An in-depth examination of the development of seven PLCs and influencing factors	2021
5	Zhang and Sun [28]	Investigating the effects of PLCs on teacher commitment in China	2020
6	Zhang and Yuan [29]	How can PLCs influence teachers' job satisfaction? A mixed-method study in China	2020

Table 5. A simplified table of studies included in the systematic review for Theme 3

No.	Authors	Title	Year
1	Butler [47]	Building a coaching culture in Irish schools; challenges and opportunities: A mixed-methods study	2024
2	Pham et al. [48]	Professional development of primary school teachers in Vietnamese educational reform context: an analysis from a sociocultural perspective	2024
3	Johns and Sayed [34]	Mapping the form of continuing professional development in public–private partnership schools in the Western Cape	2023
4	Folabit et al. [49]	Academics' perspectives on the nature and tradition of appointments of university leaders at a Cameroonian University (Cameroon)	2023
5	Marcelo-Martínez and Gende [51]	Informal trainers on social networks: New paths for professional teacher development	2023
6	Hilel and Ramírez-García [35]	The relationship between professional environmental factors and teacher professional development in Israeli Schools	2022
7	Mughal et al. [50]	Goals of the national mathematics curriculum of Pakistan: educators' perceptions and challenges toward achievement	2021
8	Tolo et al. [41]	Intelligent accountability in schools: A study of how school leaders work with the implementation of assessment for learning	2020
9	Vennebo and Aas [37]	A supportive tool for principals in guiding professional group discussions	2020
10	Love et al. [53]	Professional development to increase teacher capacity for the use of new technologies	2020
11	Kasapoğlu [52]	Investigation of teachers' perceptions on self-leadership behaviors and self-development level	2020

3.2. Discussion

The objective of this study was to methodically evaluate the leadership competencies that school heads need to have to manage teacher CPD. Compared to the past, school heads now have significantly more responsibilities requiring on a diverse skill set. Three databases were used to gather information for the extensive examination of the literature in this area, which produced 27 publications about how school heads leadership competencies shape teacher CPD. The results show that the school principals have used a variety of leadership skills. Three main themes emerged from the review: leadership and PLCs, effects of PLCs on teacher outcomes and innovative approaches to professional development. The findings reveal that effective leadership competencies are instrumental in promoting a culture of continuous learning and professional development among teachers. The evidence suggests a compelling link between school head leadership competencies and significant advancements in teacher CPD, although it also notes the variability in outcomes based on different leadership styles and contextual factors.

3.2.1. Leadership and PLCs

The role of leadership in shaping PLCs has been extensively explored in recent research. Poom-Valickis et al. [39] highlighted that the effectiveness of developing a collaborative and learning-centered school culture depends significantly on the leadership approach, emphasizing the need for shared values and leadership in school environments. Similarly, Galdames-Calderón [43] discussed how distributed leadership fosters teacher leadership and professional development, essential for school improvement. Study by Faizuddin et al. [31] further supports this by illustrating a strong correlation between distributive leadership and effective PLC practices, emphasizing the role of leadership in enhancing professional development environments. The impact of transnational collaboration and external support in leadership development within PLCs has also been a focal point of study. Strand and Emstad [38] found that participation in international PLCs helped school leaders gain significant leadership skills and a broader perspective on their educational systems, underscoring the value of diverse and cross-cultural professional exchanges. This idea of external support facilitating better leadership practices was echoed by the research of Faizuddin et al. [31], who suggested that effective CPD programs for school principals need to address challenges such as resistance to change and workload management, which can be mitigated through structured support and training. Furthermore, the importance of structured leadership training to enable effective PLCs was highlighted by Uworwabayeho et al. [44], who demonstrated how leadership training in Rwanda led to improved school management and the implementation of CPD activities. This need for structured leadership development is aligned with findings from Tahir et al. [30], where feedback from principals indicated a demand for specific training programs that enhance their leadership capacities, particularly in areas like financial management and mentoring.

The reviewed literature consistently points to the critical role of leadership in the development and sustainability of effective PLCs. Leadership styles, such as distributed and transformative leadership, alongside external support and structured professional development, are pivotal in cultivating environments that promote teacher development and improved educational outcomes. These findings underscore the necessity of investing in leadership skills and knowledge to foster productive and sustainable PLCs.

3.2.2. Effects of PLCs on teacher outcomes

Professional learning communities as one of the crucial elements in CPD, have demonstrated significant impacts on teacher outcomes such as commitment, self-efficacy, and job satisfaction. Several studies [28], [27], [42] collectively suggest that supportive leadership within PLCs, characterized by collective inquiry, sharing, and a shared sense of purpose, positively influences teacher commitment and professional development. These findings are consistent across different studies, indicating a strong relationship between the organizational aspects of PLCs and positive individual outcomes in educational settings. Moreover, the importance of departmental PLCs and their impact on teacher self-efficacy was explored by Zheng and Luo [26]. Their research highlights how reflective dialogue and collective responsibility within PLCs enhance individual teacher self-efficacy, suggesting that teacher leadership plays a pivotal role in fostering professional development. This is corroborated by Khasawneh *et al.* [46], who found that collaborative teaching practices within PLCs not only promote professional development but also positively impact student academic achievement. These findings underline the multifaceted benefits of effective PLCs, extending beyond teacher outcomes to student success. Furthermore, Zhang and Yuan [29] provided insights into how PLCs influence teachers' job satisfaction. Their mixed-method approach showed that organizational structures and supportive leadership within PLCs significantly boost job satisfaction, reinforcing the notion that well-structured PLCs create a more fulfilling and engaging professional environment for teachers. This relationship between the structural and cultural components of PLCs and their impact on teacher outcomes emphasizes the need for strategic planning and implementation of PLCs to optimize their benefits.

In summary, the collective evidence from the studies reviewed indicates that PLCs are crucial for enhancing teacher commitment, self-efficacy, and job satisfaction. The effectiveness of PLCs is significantly influenced by organizational support, leadership styles, and collaborative practices within departments. These findings suggest that educational leaders should focus on reinforcing the structural and cultural frameworks of PLCs to maximize their positive effects on teacher and student outcomes.

3.2.3. Innovative approaches to professional development

The innovative approaches to professional development in education reveal various key strategies that significantly enhance teacher capabilities and directly influence educational outcomes. Several studies [34], [35], [41] emphasized the critical role of environmental factors and leadership in shaping effective teacher CPD. The findings indicate that transformational leadership patterns, professional identity, and supportive PLCs significantly predict higher levels of teacher CPD. Furthermore, the implementation of intelligent accountability paradigms, which focus on meaningful learning and professional skill enhancement, showcases how leadership can dynamically influence the continuous development of teachers. The utilization of public-private partnerships (PPPs) and innovative models such as the LPGD model discussed by Vennebo and Aas [37] highlighted the potential for structured support in professional development. These studies suggest that PPPs can provide targeted CPD that addresses specific needs in teaching and learning, although there are calls for a broader, more holistic approach to education in these settings. The LPGD model facilitates principals in leading professional group discussions effectively, which is crucial for fostering collective professional capacities and ultimately enhancing school improvement. Technological advancements and social media also play a transformative role in teacher professional development [51], [53]. The integration of technology through CPD programs encourages the adoption of new tools and pedagogies, enhancing teacher capacity to improve classroom instruction. Moreover, informal online platforms provide novel avenues for continuous, peer-led professional development, illustrating the shift towards more flexible and accessible forms of learning for educators. In summary, the research underscores the importance of adaptive leadership, collaborative learning environments, and innovative use of technology in advancing teacher CPD. These elements are crucial in addressing the contemporary challenges in education and in equipping teachers with the necessary skills to improve their teaching practices and student outcomes.

4. CONCLUSION

The exploration of how school head leadership competencies shape teacher continuous professional development reveals a multifaceted impact, integral to fostering effective educational environments. This systematic literature review has identified core leadership competencies such as strategic vision, communication skills, and the ability to foster a supportive and collaborative culture, which are pivotal in enhancing teacher CPD. Through the synthesis of various studies, it is evident that school heads who exhibit strong leadership competencies not only motivate and empower teachers but also create conditions conducive to ongoing professional learning and growth.

However, this review is not without limitations. The studies included predominantly focus on qualitative assessments and might not capture the quantitative impact of specific leadership competencies on teacher CPD. Additionally, the diversity of educational contexts and the variance in how leadership competencies are defined and measured can limit the generalizability of the findings. Future research should address these gaps by incorporating more diverse methodologies, including longitudinal quantitative studies, to better understand the long-term effects of school head leadership on teacher CPD. Furthermore, studies could explore the impact of emerging leadership competencies required in digital transformation and crisis management within educational settings. In conclusion, the leadership of school heads is a critical lever in the advancement of teacher CPD. By enhancing their leadership competencies, school heads can effectively impact teacher growth, which in turn, contributes to improved student outcomes and overall school success. The evidence calls for targeted leadership training that emphasizes these competencies, and for frameworks that support the development of school heads in these key areas.

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