

Leadership in Times of Change: A Systematic Review of Principals' Instructional Strategies for Teacher Professional Development

Alexandra Grosu, Marius Ciprian Ceobanu

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Alexandra Grosu ^{a*} , Marius Ciprian Ceobanu ^a 

^a Faculty of Psychology and Educational Sciences, "Alexandru Ioan Cuza" University of Iași, Romania

*Corresponding author: alexandra.cc.grosu@uaic.ro

Abstract

Keywords:

educational climate, instructional leadership, teacher expertise, teacher professional development

This systematic review, conducted in accordance with PRISMA guidelines, examines how instructional leadership practices influence teachers' decisions to engage in professional development across diverse educational contexts during and after the COVID-19 pandemic. To identify relevant studies, we searched the Web of Science, Scopus, Sage, and Springer databases. We included only peer-reviewed scientific articles published in English between 2020 and 2024. Of the total of 1497 records identified, 24 met the eligibility criteria. Effective instructional leadership practices, supported by educational policies, contribute to improving teaching and increasing teachers' engagement, self-confidence, self-efficacy, and well-being. The study highlights teachers' professional development as a continuous approach that requires permanent support from school principals. Instructional leadership plays a strategic role in creating an organizational culture oriented towards collaboration, learning and innovation.

1. Introduction

The quality of the education system represents the basis for the integral development of society, being supported by various interconnected factors, such as the teaching skills of teachers, leadership practices, and the school environment (Day & Sammons, 2016). Recent improvement efforts increasingly emphasize principals' instructional leadership as a lever for school performance, particularly through teachers' professional development (Liu et al., 2022). According to the OECD (2021), accelerated changes in society determine the need for teacher training as promoters of critical thinking, facilitators of the learning process and organizers of inclusive climates. Although the literature underscores the importance of instructional leadership, important uncertainties remain about which intervention components are most effective, which contextual conditions constrain or enable their impact, and how to adapt these practices to individual schools (Klar et al., 2020).

2. Theoretical foundation

2.1. Instructional leadership

In research on effective schools, educational leadership is considered a key factor (Duke, 1987). It gained prominence in 1980s educational theory linked to reform agendas focused on efficiency and accountability (Hallinger & Murphy, 1985). The concept has evolved from a focus on resource

management to approaches that integrate strategic planning with direct pedagogical support, aligned with contemporary standards (Suh, 2024). Behaviors and skills associated with this form of leadership include managing curriculum and instruction, goal setting, supervising and evaluating teaching, ensuring staff professional development, managing resources, promoting a positive school climate, and cultivating high expectations for achievement (Duke, 1987). Research on school effectiveness has long emphasized the principal's role in initiating and sustaining improvement (Hallinger & Murphy, 1987).

Thien & Liu (2024) note that leaders who observe classroom instruction, provide ongoing feedback to teachers, and support peer collaboration can significantly enhance teaching quality. Principals' supportive supervision has been linked to increased job satisfaction, enhanced teacher self-efficacy, and improved student achievement (Hattie & Timperley, 2007). Similarly, Liou & Dali (2014) argue that fostering an open, collaborative climate, involving teachers in decision-making, and building trust by granting autonomy are important practices for strengthening teachers' professional development.

2.2. Teachers' professional development

The process of continuous improvement of skills and knowledge during the teaching career is called



professional development (Bolam, 2002). This is an approach through which the teacher builds and affirms his professional identity, transforming tacit knowledge into explicit knowledge. At the same time, within his area of expertise, professional development is seen as a process of assuming responsibility both professionally and personally (Berliner, 2001). Continuous professional development is how teachers improve their teaching, pedagogical knowledge, manage the classroom more effectively, and align with global educational norms (Olatunde-Aiyedun & Ogunode, 2021).

Eraut (1994, p.20) considers that “there are three major contexts in which professional knowledge is acquired: the academic context, the context of institutional discussions about politics and the practice itself”. Given systemic changes and emerging challenges, teachers must continually evolve and adapt their methods; continuous professional development is therefore a lifelong journey (Olatunde-Aiyedun & Ogunode, 2021).

2.3. The link between instructional leadership and teachers’ professional development

Principal leadership influences teachers’ beliefs, motivation, engagement, self-esteem, performance, and interactions (Bellibaş & Liu, 2017, 2018; Leithwood et al., 2019). These relationships do not follow a linear trajectory, but are shaped by contextual factors, which requires a detailed theoretical explanation of how leadership supports professional development. Through a systematic analysis, Roberto (2023) highlights that principals affect teachers’ professional development, but this influence is conditioned by several factors: educational policies, the balance between administrative tasks and teaching priorities, deficiencies in principal training, the prevalence of classroom observation practices, and trust in the professional development process. This perspective is also supported by Dilekçi & Limon (2020), who show that principals’ instructional leadership influences teachers’ professional engagement not directly, but through subjective well-being, highlighting the importance of the climate created by the leader to support motivation, commitment, and development.

In contexts where institutional support is limited, as is the case in schools in the Philippines, the relationship between leadership and professional development manifests itself mainly through mechanisms such as constructive feedback, collaboration, and opportunities for continuous

learning (Kilag & Sasan, 2023). Quality relationships between teachers and principals, based on trust, open communication, and mutual respect, are essential to support professional development. Continuing education opportunities, such as workshops, mentoring, and coaching sessions, are also necessary. These findings are important for principals and policymakers to promote effective teacher professional development.

2.4. The present study

The concern in recent years to improve education has increasingly highlighted the role of instructional leadership in the professional development of teachers, and at the same time, in increasing school performance (Nguyen et al., 2020; Liu et al., 2022).

The existing literature presents several systematic reviews that synthesize studies published up to and including 2019. Notable examples include Kirsten (2020), a systematic review of research on teacher professional development as a policy tool, and Roberto (2023), on the pedagogical leadership of school managers and teacher professional development. However, given the significant changes in the recent period (2020–2024), including the impact of the COVID-19 pandemic and the accelerated digitalization of education, an update of these analyses is necessary.

Thus, the aim of this systematic review is to integrate findings from research published between 2020 and 2024 on how principals’ instructional leadership relates to teacher professional development, highlighting the factors that influence this connection.

The research questions were formulated according to the PICO model, a tool frequently used in systematic reviews. This model highlights four important components in research: population, intervention, comparison, results. Based on these, we aim to find the answers to the following questions:

RQ1: How do instructional leadership practices influence the professional development of teachers in various schools during 2020–2024?

RQ2: What types of instructional leadership strategies or interventions prove to be effective in supporting the continuing training of teachers in a contemporary educational context?

RQ3: What social, organizational, contextual, and individual factors influence the impact of school principals on teachers’ professional development?

3. Methodology

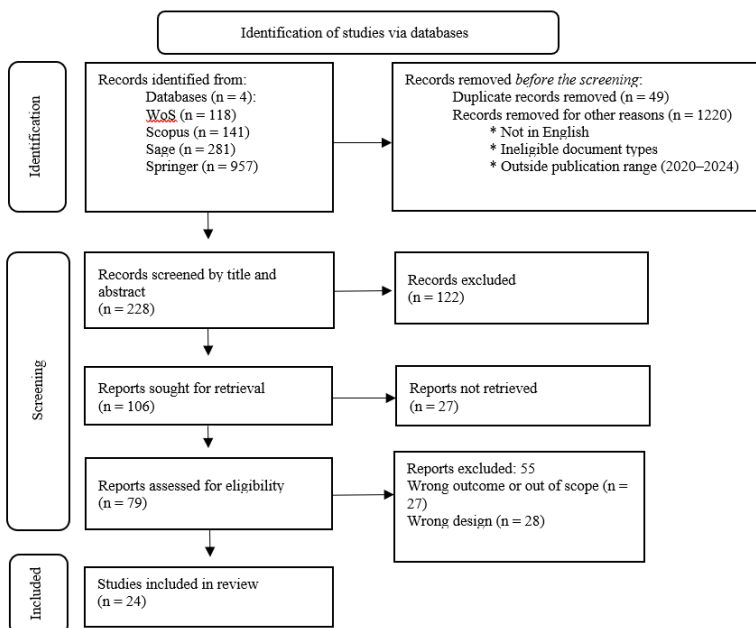
This systematic review was prepared according to the PRISMA protocol (Preferred Reporting Items for Systematic reviews and Meta-Analyses; Page et al., 2021). VOSviewer 1.6.20 was used to perform the bibliometric analysis.

3.1. Literature search

The initial literature search targeted 4 electronic databases. We selected Web of Science and Scopus as primary sources due to their international, multidisciplinary coverage and citation tracking. We supplemented these with Sage and Springer for targeted searches in key educational leadership journals. The same search strategy was applied in all databases and focused on the following key terms: “instructional leadership” AND “teacher” AND “professional development”. The search has been restricted to the *article title*, *abstract*, *keywords* fields. In the identification stage, 1497 records were found. Before screening, we introduced specific criteria: publication period (2020–2024), language used (*English*) and type of scientific reports (*peer reviewed journal articles*). Thus, records that do not comply with those criteria (1220) and duplicates (49) were excluded. The flow diagram of the study selection process (following PRISMA) is shown in Figure 1.

Figure 1

Prisma Diagram (Page et al., 2021)



3.2. Study selection

After removing duplicates, all selected studies (228) were analyzed on the basis of title and abstract, excluding 122. Subsequently, out of the 106

recordings, 27 were excluded because the full text was not accessible. Retrieved full-text studies were selected for the eligibility stage (79) and evaluated based on the inclusion and exclusion criteria described below.

Inclusion criteria: peer-reviewed journal articles (English, 2020–2024), quantitative or mixed-methods with quantitative results, conducted in pre-university settings (pre-primary to upper-secondary) with in-service teachers and/or principals, explicitly measuring instructional leadership and teacher professional development.

Exclusion criteria: qualitative studies, meta-analyses or systematic reviews; studies that examine general trends in leadership associated with school environments, teacher evaluation, or student outcomes; studies that present teacher certification programs in specific areas or training programs for principals; studies that measure various teacher capacities and behaviors (e.g., engagement, collaboration, leadership, educational accountability, self-efficacy, motivation, digital integration strategies) without focusing on the principal instructional leadership.

In total, 24 reports that met the eligibility criteria were included in the systematic review. These articles included a total of 46,214 participating teachers and principals, plus 1000 students. The summary of the selected articles is illustrated in Table 1 (Appendix A), where we list the database, authors, year of publication, title, country/region, aim, methods and main results. These studies highlight the role of instructional leadership in supporting teachers, strengthening self-efficacy and promoting professional development in various educational contexts, aspects that are further detailed in the results and discussion section.

4. Results and discussions

The literature analysis was carried out on a sample of articles selected from the main scientific databases. As can be seen in Figure 2, most of the articles come from Web of Science (46%) and Scopus (33%), followed by Sage (13%) and Springer (8%). This distribution reflects both the international recognition of the topic and the relevance of the topic to the global scientific community.

In terms of publication period, Figure 3 illustrates the number of articles published annually between 2020 and 2024. In 2020, six studies were identified, originating from Singapore, Rwanda, Malaysia, Japan,

South Korea, Kiribati, and Germany. In 2021, three articles were included (Kosovo, Italy, and China), while in 2022 five articles were identified, including two from Indonesia, alongside studies from China (Shandong Province), Switzerland, and the USA (Boston). In 2023, four articles were selected (Kuwait, China, Chile, and Hong Kong). In 2024 six studies were identified, from Ghana, Nigeria, the Czech Republic, China, and Malaysia.

Figure 2

Distributions of articles in databases

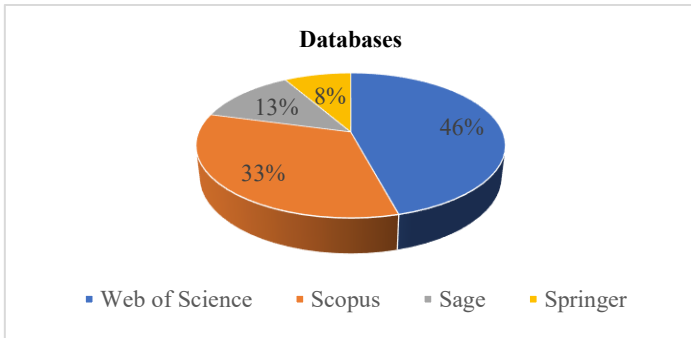


Figure 3

Distribution of articles by year (2020–2024)

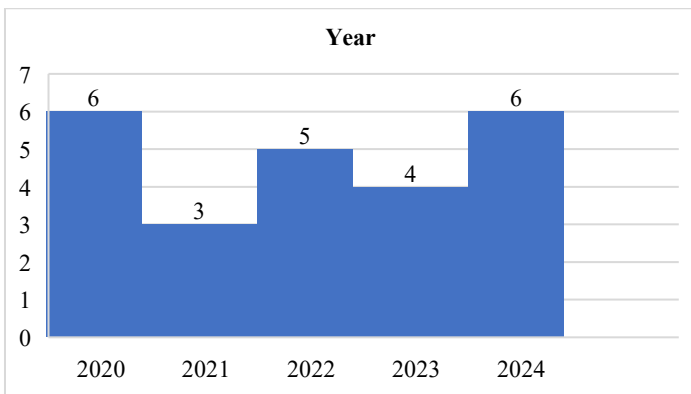


Figure 4

Distribution of articles by geographical area

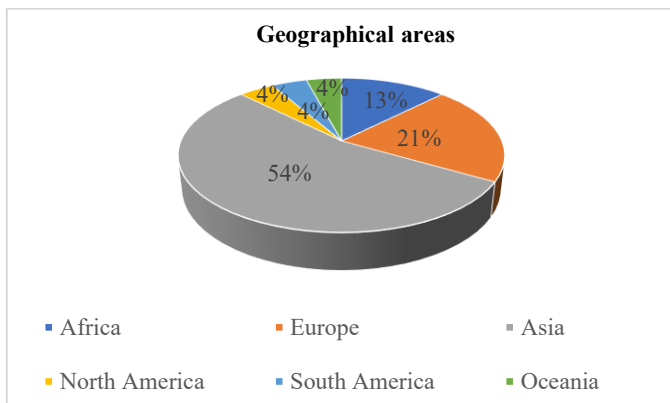


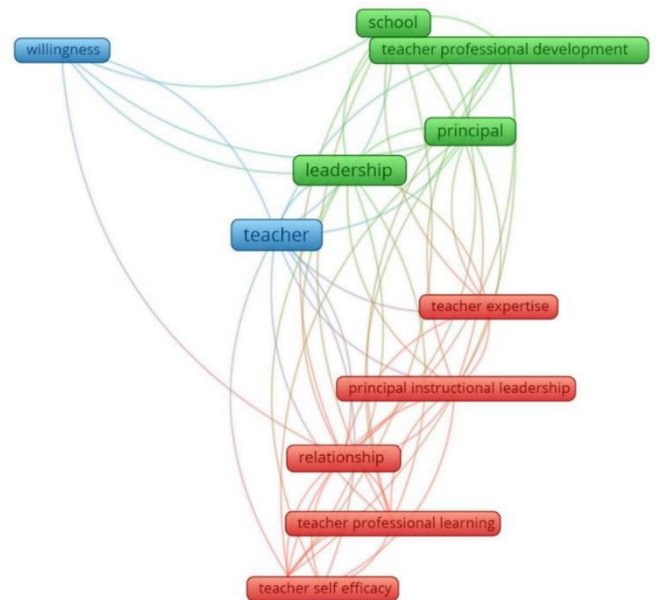
Figure 4 illustrates the distribution of articles according to broader geographical areas: Africa (3), Asia (13), North America (1), South America (1), and Oceania (1). Compared to the country-level

distribution shown previously, this figure provides a more comprehensive overview of how research on instructional leadership and teacher professional development is spread across regions.

To highlight the keywords in the selected articles and the links between them, we generated a bibliometric map using the scientific software VOSviewer. In order to obtain a result that illustrates the relevant concepts, we included certain constraints. Thus, we reduced the number of occurrences of the keywords to 12. Subsequently, the software generated a map with 3 colored clusters, which represent groups of elements, based on co-occurrence or similarity in the data set (van Eck & Waltman, 2014). The bibliometric analysis is illustrated in Figure 5.

Figure 5

Bibliometric map of articles based on keywords



The bibliometric map highlights how instructional leadership practices, professional relationships and organizational or individual factors influence teachers’ professional development. At the center of the map lies the first cluster, where the “teacher” is positioned, directly connected to both school leadership and “willingness”, emphasizing the role of motivation in continuous training.

The second cluster groups concepts such as “leadership”, “principal”, “school”, and “teacher professional development”, showing that the organizational environment and school management are essential for the professional development of teachers. This provides insight into the first research question (RQ1), which investigates the influence of

instructional leadership on teacher development in different schools.

The third cluster comprises the terms “relationship,” “teacher self-efficacy,” “teacher professional learning,” “teacher expertise,” and “principal instructional leadership.” It operationalizes research question 2 (RQ2) by linking principals’ instructional leadership to teachers’ learning and expertise, while underscoring the mediating role of relational trust and teacher self-efficacy in professional progression (e.g., through classroom observation with feedback, collaborative professional learning, and mentoring/coaching).

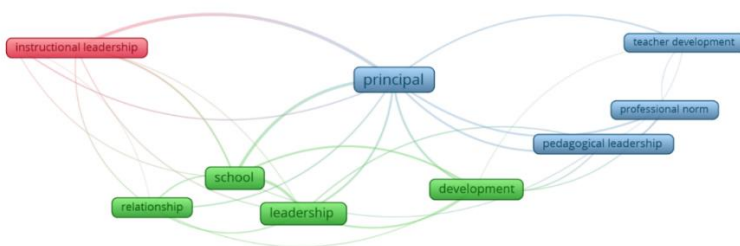
The multiple links between these clusters highlight the external and individual factors (RQ3) that influence the impact of the school principal on teacher development: professional relationships, school culture, principal leadership, but also individual teacher motivation and expertise. The map shows that the professional development of teachers is the result of a complex interaction between leadership, organizational context and personal factors.

4.1. A comparative perspective on conceptual evolution

To highlight the conceptual evolution, we also generated a bibliometric map (Figure 6) based on the articles included in the systematic analysis conducted by Roberto (2023), covering the period 2010–2019), which allows a comparison with the current analysis (2020–2024).

Figure 6

Bibliometric map based on the systematic review by Roberto (2023)



The analysis of the two periods highlights that teacher professional development has evolved from norm-based structures to dynamic structures, which emphasize the importance of factors that motivate teachers to progress in their careers. The 2010–2019 map reflects connections between concepts such as “teacher development”, “professional norm” and types of leadership (“pedagogical”, “instructional”) that indicate formal coordination and the role of the

principal as a central authority. The psychological dimensions of teachers are absent, while professional development is marked by more general terms. In contrast, the 2020–2024 map introduces concepts that reshape educational leadership and provide new connections. “Teacher self-efficacy” is recognized as important in achieving satisfactory teaching outcomes and influencing classroom performance (Tschannen-Moran & Hoy, 2001; Bellibaş & Liu, 2017). At the same time, supporting the quality of the teaching process requires “teacher professional learning” which involves engaging in formal and informal learning activities to improve practices (Kwakman, 1998) and increase teaching expertise, being a fundamental objective of career sustainability (Lin et. al, 2005). The need to improve teachers’ professional competence has become even more accentuated as a result of the educational transformation caused by COVID-19 pandemic. In this context, an essential construct has emerged: “willingness”, which illustrates teachers’ own initiative to address changes and stimulate professionalism (Herawati et al., 2022). These concepts indicate that, in recent years, educational research has increasingly focused on the teacher as an active agent of change.

4.2. Findings by research questions

The findings are structured into three thematic areas, each reflecting perspectives on the previously formulated research questions.

RQ1 – influences of instructional leadership on the professional development of teachers in various schools during 2020–2024

Instructional leadership has multiple influences on teachers’ professional development (He et al., 2024; Krasniqi, 2021; Herawati et al., 2022; Volante et al., 2023). Internationally, evidence indicates that instructional leadership is considered a predictor of teachers’ participation in collaborative, mentoring, and coaching activities. This fosters a climate conducive to continuous learning, both individual and collective (Kim & Lee, 2020). In Kiribati, Owen (2020) demonstrates that strategies supported by instructional leadership and educational policies, such as the formation of teacher learning groups, ongoing coaching, and monitoring student achievement, can optimize the skills of school leaders, as well as the capabilities of teachers.

Principals have a central role in supporting, advising, and encouraging teachers to participate in collaborative learning activities, which leads to increased professionalism and improved teaching

practices (Krasniqi, 2021). Instructional actions encourage collaboration between teachers (Alazmi & Hammad, 2023; Hua et al., 2024), help them focus on students' learning and increase teachers' confidence in their own abilities (Amzat et al., 2022; Ansaah et al., 2024). Thus, the high level of self-efficacy is determined by the clear setting and communication of school objectives by the principal, the supervision and evaluation of the training process, the constant monitoring of students' progress, and the fostering of professional development (Xie et al., 2022).

Herawati et al. (2022) emphasize the positive influence of instructional leadership on teachers' professional competences, but also on their willingness to adapt to new educational changes, such as digital learning. In a study conducted in Singapore, Nguyen et al. (2020) mention the existence of a positive association between creating a positive educational climate, promoting professional development and increasing teaching skills. Instructional leadership practices are significant predictors for four key competencies: pedagogical, curricular, knowledge of student learning, and assessment. The effects of instructional leadership are largely mediated by the professional agency of teachers (Li et al., 2023), but also by the school climate based on trust and collaboration (Hua et al., 2024). Through the favorable climate created by the principals, teachers become more autonomous and involved in their own professional development. Similarly, Meng & Chang (2024) highlight in a study conducted in rural schools in China, that high perceptions of instructional leadership in school not only boost teachers' didactic expertise, but also increase their level of job satisfaction and well-being. Instructional leadership acts as a catalyst for teachers' commitment at the individual level (To et al., 2023) and their motivation towards their own training.

On the other hand, Straková & Simonová (2024) state that the lack of instructional leadership and support from the school manager increases the likelihood that teachers will not advance professionally and give up their teaching careers. In schools where the principal recognizes the work of teachers, provides support and is responsibly involved in continuous training, there is a higher tendency of teachers to remain in the profession. Also, teachers who perceive leadership as open, supportive, and learning-oriented are more willing to engage dynamically in educational innovation initiatives (Rehsteiner et al., 2022).

Schools need to transform into active learning institutions through structural and mindset changes. In high-performing primary schools in Malaysia, the principal' involvement and active presence promotes a culture of continuous evaluation and reflection. By guiding, motivating, and setting a clear vision, leaders directly influence teachers' participation in professional development and collective learning activities (Hui & Singh, 2020).

RQ2 – types of instructional leadership strategies or interventions effective in supporting the continuous training of teachers in a contemporary educational context

Recent studies reviewed show that effective leadership practices improve teaching while encouraging teacher engagement and collaboration. According to Sibomana (2020), these include: defining and explicitly communicating school goals, planning curriculum in cooperation with teachers, supervising the training process through classroom observations and constructive feedback, providing teaching resources, and supporting engagement in professional development activities. To support professional development, it is necessary to clearly identify training needs and plan specific activities, providing real access to both internal and external learning opportunities. Other strategies that have been shown to be effective in this process are empowering teachers to organize peer training activities and informal mentoring between junior and experienced teachers (Nguyen et al., 2020; Krasniqi, 2021). Also, the active involvement of principals in promoting modern technologies and innovative teaching methods contributes significantly to teachers' professional progress (Paletta et al., 2021; Huang et al., 2021).

Building professional learning communities and real collaboration among teachers are the foundations of professionalization in education. Collective activities, such as workshops, study groups, coaching, and the exchange of constructive feedback, facilitate reflection on teaching practices and continuous improvement of teaching (Volante et al., 2023; Kraft & Christian, 2022; Herawati et al., 2022). Creating a climate of trust and mutual support, in which teachers feel safe to collaborate and share practices, is a determinant of professional expertise (Li et al., 2023; Hua et al., 2024). Effective leadership, in this sense, is adaptive, but relies on participatory and instructive practices: principals involve teachers in educational decision-making, observe classrooms and provide formative feedback, facilitate professional learning

communities, and co-design continuous development activities. These behaviors are associated with a collaborative culture, greater teacher autonomy, motivation, and, ultimately, innovation in teaching and learning (Krasniqi, 2021; Hui & Singh, 2020; Klein & Bronnert-Härle, 2020). A key element in instructional leadership is the frequent observation of classroom activity, followed by specific and constructive feedback, which encourages teachers' reflection and self-evaluation. Such practices lead to significant improvements in teaching methods and an increase in educational performance (Kraft & Christian, 2022; Kim & Lee, 2020).

RQ3 – social, organizational, contextual, and individual factors influencing the impact of school principals on teachers' professional development

Educational leadership and teachers' professional development are influenced by multiple interconnected factors.

Social factors. Good relationships with peers, mutual support, and trust within the team make teachers more open to exchanging ideas, participating in training activities, and sharing experiences (Amzat et al., 2022; He et al., 2024). Paletta et al. (2021) demonstrate that where there is a positive climate and a collaborative culture, innovation in education increases. In China, teacher mentoring is a long-standing practice in which less experienced teachers benefit from the collaboration and expertise of their more experienced colleagues (Xie et al., 2022).

In addition, community and parent involvement can support or, conversely, complicate school life (Krasniqi, 2021; Straková & Simonová, 2024). When teachers feel valued and supported not only by peers, but also by parents and students, their motivation increases (Li et al., 2023; Meng & Chang, 2024).

Organizational factors. Teachers' continuous professional development varies depending on organizational culture, principals' involvement in coordinating specific activities (Amzat et al., 2022; Hui & Singh, 2020), professional learning communities, leadership support, and constructive feedback (Volante et al., 2023; Hui & Singh, 2020). The surrounding political environment shapes the freedom of action of principals. In Singapore, the centralized system limits the independence of managers, but they can influence the vision and organizational climate (Paletta et al., 2021). In private schools, principals have greater autonomy and are more involved in educational leadership than in public schools, where administrative duties predominate

(Ansaah et al., 2024). In these contexts, managerial support, culture, school structures, resources, and available time are essential for professional development, while the experience and skills of the principal influence the change process (Krasniqi, 2021). If the school has a rigid culture, with few resources or time for training, teachers' confidence in their own abilities decreases (Krasniqi, 2021; Herawati et al., 2022).

Contextual factors. Socioeconomic factors, educational policies, the degree of centralization, and available resources significantly influence professional development (Amzat et al., 2022; Paletta et al., 2021). For example, in Singapore or Rwanda, centralized systems limit principal autonomy but emphasize instructional leadership as a solution to resource shortages (Paletta et al., 2021; Sibomana, 2020). By contrast, in Kosovo, education policies promote collaboration between teachers, but in the absence of time and resources, these initiatives do not bring progress (Krasniqi, 2021). The context of the COVID-19 pandemic and the pressure of digitalization have accelerated the need for change and professional development (Herawati et al., 2022). The results of these studies show that policy initiatives encourage professional development only if they are accompanied by autonomy at the school level, adequate material resources, and the time needed for training.

Individual factors. Teaching experience, motivation and openness to learning are factors that determine the direction of teachers' careers (Kim & Lee, 2020; Herawati et al., 2022). Nguyen et al. (2020) show that teaching experience positively influences competences, and Xie et al. (2022) demonstrate that the effects of instructional leadership are stronger among early-career teachers, who need more support and mentoring; but as they gain experience, they become more autonomous. At the same time, teachers' involvement in continuing education depends on personal attitudes and beliefs (Thien & Liu, 2024), health status (Straková & Simonová, 2024), level of professional agency (Li et al., 2023) and self-efficacy (Herawati et al., 2022), willingness to receive and provide feedback (Volante et al., 2023), degree of professional awareness and desire for self-development (Meng & Chang, 2024).

5. Limitations and future directions

The studies in this systematic review are extracted from only 4 databases (Web of Science, Scopus, Sage, Springer), and the number is relatively small (24).

Most of the studies analyzed concern the use of self-reported data by teachers, and the results may be overestimated. The cross-sectional design of most studies limits the identification of causal relationships. Future research could analyze longitudinal data to assess the impact of instructional leadership in the long term. The results of the studies target specific regions (e.g., Kiribati, China) and cannot be generalized to other educational contexts. Specific practice patterns could be highlighted by future comparative research of education systems or education policies in different countries. Also, the professional development of teachers was analyzed as a unique concept. It is recommended to explore in more detail the types of professional development (e.g., individual/collective; formal/informal) in relation to different dimensions of instructional leadership (Kim & Lee, 2020). Another important aspect concerns the use of technology for career advancement, but it was not sufficiently highlighted by the studies included in this systematic review. Thus, future studies could investigate the role of digitalization in teachers' continuing training, as well as its effects on student motivation and outcomes.

Practical implications

This systematic review contributes to the evidence that highlights the impact of educational leadership on teachers' decisions to advance their careers and deepen their knowledge. The reviewed studies emphasize that educational excellence is a shared responsibility of society, school leaders, teachers, and parents. It is important to develop educational policies that expand the skills of an instructional leader and promote self-efficacy and collaboration among teachers (Meng & Chang, 2024). The exchange of good practices and professional development can be promoted through rigorous mentoring, coaching (Herawati et al., 2022), and quality feedback (Kraft & Christian, 2022). Principals who encourage teachers' autonomy, initiative, and conscious involvement in their own professional development enhance their expertise (Li et al., 2023). Thus, the central idea of this study emphasizes the importance of strategies that encourage collaboration, active participation, and professional development (Li et al., 2023; Kim & Lee, 2020; Meng & Chang, 2024), while highlighting the need to promote self-efficacy, recognize individual expertise, and cultivate willingness as key factors of teacher engagement.

6. Conclusions

This systematic review, covering the period 2020–2024, finds that instructional leadership is a central factor in teachers' professional development and in strengthening a school climate that supports learning and collaboration. Principals who use instructional practices, such as establishing a shared vision and facilitating teamwork, help improve teacher effectiveness, support lifelong learning, and promote collaboration within the school community.

The main contribution of this review is to clarify the conditions under which these effects occur and for whom they are strongest. The relationship between principal leadership and professional development is mediated by teachers' self-efficacy and professional agency, while being shaped by social, organizational, contextual, and individual factors. The effects are more pronounced among early career teachers and in schools with a collaborative culture and adequate resources. The COVID-19 pandemic and rapid digitalization have intensified these needs and highlighted the importance of ongoing support for teachers.

At the same time, differences have been identified between the types of schools: private or high-performing schools tend to apply more active instructional leadership, while schools with mature cultures are more resistant to change. Instructional leadership often complements distributed leadership, where responsibilities are shared between principals and teachers. In such contexts, the impact on continuous professional development is amplified.

Overall, instructional leadership supports teacher development and helps build an organizational culture focused on learning, collaboration, and innovation. Its effectiveness depends on educational policies, investments in principal training, adequate resources, and strategies adapted to the context of each school.

Authors note:

Alexandra Grosu. PhD Student at the Faculty of Psychology and Educational Sciences, “Alexandru Ioan Cuza” University of Iași. Research interests are in the field of educational sciences, with a focus on pedagogy, educational leadership and teacher training.

Marius Ciprian Ceobanu. PhD Professor, Head of the Teacher Training Department at the Faculty of Psychology and Educational Sciences, “Alexandru Ioan Cuza” University of Iași. Research interests focus

on the acceptance and use of technology and AI in educational contexts, digital education, digital pedagogy, virtual learning. He is the author, co-author and coordinator of a significant number of volumes, chapters in volumes and articles published in specialized scientific journals.

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Appendix

Table 1

Studies included in the systematic review

Database	Author(s) (year)	Title	Journal	Country/ Region	Aim	Methods	Results
WOS	Ansaah, E., Abonyi, U.K., & Salifu, I. (2024)	Headteachers' Instructional Leadership Practices: A Comparison of Public and Private Basic Schools in Two Selected Districts in Ghana	Leadership and Policy 'in Schools	Ghana (West Africa)	Substantiation of specific instructional leadership practices in public and private schools.	Cross-sectional study; simple random sampling of teachers; data collected via PIMRS ^a ; statistical analyses: descriptive statistics and MANOVA.	Private schools are more supportive of lifelong learning opportunities for teachers, compared to state schools.
WOS	He, P., Guo, F., & Abazie, G.A. (2024)	School Principals' Instructional Leadership as a Predictor of Teacher's Professional Development	Asian-Pacific Journal of Second and Foreign Language Education	Nigeria (West Africa)	Investigating the influence of instructional leadership on teachers' professional development.	Instructional leadership model by Hallinger and Murphy (1985); PILPTD ^b questionnaire; statistical analyses: correlation and multiple regression.	The instructional leadership of the principal has a strong and significant impact on the professional development of teachers.
WOS	Straková, J. & Simonová, J. (2024)	Why do teachers leave schools? Evidence from lower secondary schools in the Czech Republic	International Journal of Educational Management	Czech Republic (Central Europe)	Identify the factors that lead to teacher retention, comparing career stages.	Longitudinal design; statistical analysis: binary logistic regression.;	The instructional support of the principal for professional development is a factor that influences teachers not to quit their jobs.
WOS	Xie, Z., Wu, R., Liu, H., & Liu, J. (2022)	How Does Teacher-Perceived Principal Leadership Affect Teacher Self-Efficacy Between Different Teaching Experiences Through	Frontiers in Psychology	China Shandong Province	To analyze the teachers' perception about the influence of instructional leadership on didactic self-efficacy.	Standardized questionnaires based on the TALIS 2013 scale; statistical analysis: multilevel SEM.	A principal who encourages collaboration between teachers positively influences their self-efficacy.

		Collaboration in China? A multilevel structural equation model analysis based on threshold					
WOS	Rechsteiner, B., Compagnoni, M., Wullschleger, A., Schäfer, L.M., Rickenbacher, A., & Maag Merki, K. (2022)	Teachers Involved in School Improvement: Analyzing Mediating Mechanisms of Teachers' Boundary-Crossing Activities Between Leadership Perception and Teacher Involvement	Teaching and Teacher Education	Switzerland	Analyze the relationship between the principal's leadership and teachers' involvement in school improvement.	Statistical analysis by structural equation modeling (SEM); validation by confirmatory factor analysis.	Cognitive and social activities partially mediate the relationship between perceived leadership and teacher involvement.
WOS	Amzat, I.H., Yanti, P.G., & Suswandari, S. (2022)	Estimating the Effect of Principal Instructional and Distributed Leadership on Professional Development of Teachers in Jakarta, Indonesia	SAGE Open	Indonesia	Investigating the influence of instructional and distributed leadership on teachers' professional development.	Stratified seating and quota sampling; questionnaires based on the leadership scale proposed by Hallinger and Murphy (1985) and TALIS; statistical analysis: structural modeling by SmartPLS;	Instructional leadership positively influences distributed leadership. Both are positively associated with professional development.
WOS	Nguyen, D., Ng, D., Luo, W., & Mansor, S. (2020)	Exploring the Relationships Between Instructional Leadership and Teacher Competences: Singapore Primary School Teachers' Perceptions	International Journal of Leadership in Education	Singapore	Analysis of the relationship between instructional leadership and teacher competencies.	Data collected through questionnaires; statistical analyses: Rasch for validation of the measurement scale, ANOVA and hierarchical regression;	Leadership focused on professional development is positively associated with teachers' competences.
WOS	Krasniqi, R. (2021)	Principal Role in Supporting Teacher Collaborative Learning	Research in Educational Administration and Leadership	Kosovo	Examining the role of the school principal in supporting teachers to participate in collaborative learning activities.	Mixed study: questionnaires applied to teachers, analyzed through descriptive and inferential statistics; interviews with executives, analyzed thematically;	Principals have a key role in determining learning communities.
WOS	Alazmi, A.A., & Hammad, W. (2023)	Modeling the Relationship Between Principal Leadership and Teacher Professional	Educational Management Administration and Leadership	Kuwait	Investigate the role of learning-focused leadership in professional learning.	Statistical analyses: confirmatory factor analysis and SEM;	The indirect effect of the school leader on professional learning is achieved through the trust and

		Learning in Kuwait: The Mediating Effects of Trust and Teacher Agency					agency of teachers.
WOS	Paletta, A., Alimehmeti, G., Mazzetti, G., & Guglielmi, D. (2021)	Educational Leadership and Innovative Teaching Practices: A Polynomial Regression and Response Surface Analysis	International Journal of Educational Management	Italy	Investigate the factors that determine the adoption of innovative teaching practices.	Convenience sampling technique; statistical analyses: polynomial regression and response surface analysis;	Schools where principals and teachers agree on instructional leadership are associated with a higher level of innovative teaching practices.
WOS	Sibomana, I. (2020)	Perceptions of Teachers on Instructional Leadership Behaviors of Secondary School Principals in Rwanda	Educational Management Administration and Leadership	Rwanda	Analysis of teachers' perceptions of instructional leadership practices and their impact on professional development.	Statistical analysis in SPSS; calculation of means and standard deviations for determining the frequency of instructional leadership behaviors;	The results suggest the need to allocate resources to improve instructional leadership in Rwanda.
Scopus	Herawati, R., Tjahjono, H.K., Qamari, I.N., & Wahyuningsih, S.H. (2022)	Does Teacher's Willingness to Change Enhance Professional Competence?	European Journal of Educational Research	Indonesia	Analysis of how instructional leadership and self-efficacy influence professional competence after the COVID 19 pandemic.	Statistical analysis: SEM using AMOS 23.0; mediation analysis via Sobel test;	Instructional leadership significantly influences teachers' willingness to adapt and, indirectly, professional competence.
Scopus	Hua, S., Mansor, A.N., Bin Jamaludin, K.A., & Chen, X. (2024)	The Influence of Principals' Instructional Leadership on Teachers' Professional Learning Community: The Mediating Role of School Climate	Health, Science and Technology - Conference Series	Malaysia	Analysis of the impact of instructional leadership on professional development communities.	Statistical analyses: correlation analysis, mediation analysis and SEM;	The effect of leadership on teachers is entirely mediated by the school climate, through trust and the exchange of information.
Scopus	Meng, W. & Chang, Y-C. (2024)	The Effect of Perceived Principal's Instructional Leadership on Occupational Well-Being Among Rural Elementary and Middle School Teachers	The Open Psychology Journal	China	To investigate the impact of the instructional leadership of principals on the occupational well-being of teachers in rural areas.	Questionnaires distributed online; statistical analysis: SEM;	Didactic effectiveness and awareness of professional development have a mediating effect between perceived instructional leadership and occupational well-being.

Scopus	Hui, L.S., & Singh, G.S.B. (2020)	The Influence of Instructional Leadership on Learning Organization at High-Performing Primary Schools in Malaysia	Asian Journal of University Education	Malaysia	Analysis of the influence of the instructional leadership of principals on the learning organization in high-performance schools.	Questionnaires based on 2 instruments: PIMRS ^a and MSTTS ^c ; statistical analysis: SEM in AMOS 24;	Instructional leadership has a positive and significant influence on the organization of the learning process at the school level.
Scopus	Li, Y., Cai, Y., & Tang, R. (2023)	Linking Instructional Leadership and School Support to Teacher Expertise: The Mediating Effect of Teachers' Professional Development Agency	Sustainability	China	Examining the impact of principals' instructional leadership and school support on teachers' expertise.	Stratified cluster sampling; statistical analysis: SEM and bootstrapping;	Instructional leadership influences the development of teachers' expertise, but peer and student support are stronger factors.
Scopus	Kim, T., & Lee, Y. (2020)	Principal Instructional Leadership for Teacher Participation in Professional Development: Evidence from Japan, Singapore, and South Korea	Asia Pacific Education Review	Japan Singapore South Korea	Investigating the relationship between the instructional leadership of principals and teachers' participation in professional development.	International survey; two-stage stratified sampling; TALIS 2013 dataset; main method of analysis: two-level logistic regression;	Instructional leadership especially influences teachers' participation in activities such as mentoring, peer observation, and coaching.
Scopus	Owen, S.M. (2020)	Improving Kiribati Educational Outcomes: Capacity-Building of School Leaders and Teachers Using Sustainable Approaches and Donor Support	Journal of Adult and Continuing Education	Kiribati	Investigating the impact of instructional leadership on teachers' professional development and improving school outcomes.	Mixed research; monitoring through observations and satisfaction questionnaire;	Instructional leadership has helped improve teachers' competencies through ongoing coaching and mentoring.
Scopus	Volante, P., Müller, M., Salinas, A., & Cravens, X. (2023)	Expert Teams in Instructional Leadership Practices Based on Collaboration and Their Transference to Local Teaching Improvement Networks	Research in Educational Administration and Leadership	Chile	Analysis of the impact of instructional leadership and organized collaboration between teachers on teaching improvement.	Study design: design-based research (DBR); mixed-methods approach; five-dimensional questionnaire and semi-structured interviews with participants and a control group.	Collaborating teachers believe that instructional leadership effectively supports professional development.
Sage	Huang, L., Huang, Y., & Zhou, S. (2021)	Examining Principal Leadership Effects on Teacher Professional Learning in China: A	Educational Management Administration and Leadership	China	Exploring the influence of different leadership practices on personal learning and	Stratified sampling; questionnaires applied to teachers and principals, PISA 2015; statistical analysis: two-level	Instructional leadership (focused on improving teaching) has a positive impact

		Multilevel Analysis			collaborative learning.	hierarchical linear modeling (HLM);	on collaborative learning.
Sage	Kraft, M.A., & Christian, A. (2022)	Can Teacher Evaluation Systems Produce High-Quality Feedback? An Administrator Training Field Experiment	American Educational Research Journal	USA (Boston)	Analysis of the effectiveness of an evaluator training program to improve the feedback provided to teachers during the evaluation process.	Sampling technique: staggered randomized controlled trial; questionnaires applied to teachers and evaluators; experimental analysis based on statistical modeling;	Effective instructional leadership requires investment of time and resources to sustain professional development conversations.
Sage	To, K.H., Yin, H., Tam, W.W.Y., & Keung, C.P.C. (2023)	Principal Leadership Practices, Professional Learning Communities, and Teacher Commitment in Hong Kong Kindergartens: A Multilevel SEM Analysis	Educational Management Administration and Leadership,	Hong Kong	Examining the relationship between principals' leadership practices, professional learning communities (PLCs), and teachers' commitment to kindergartens.	Quantitative, cross-sectional study with multilevel structural equation modeling (MSEM);	The development of professional learning communities was facilitated by the leadership practices of school leaders.
Springer	Thien, L.M., & Liu, P. (2024)	Linear and Nonlinear Relationships Between Instructional Leadership and Teacher Professional Learning Through Teacher Self-Efficacy as a Mediator: a partial least squares analysis	Humanities and Social Sciences Communications	Malaysia	Investigating the linear and nonlinear relationships between the instructional leadership of principals and the professional learning of teachers, having as mediator the self-efficacy of teachers.	Quantitative, cross-sectional study; statistical analysis: partial least squares structural equation modeling (PLS-SEM);	Teachers' self-efficacy significantly mediates the relationship between instructional leadership and professional learning.
Springer	Klein, E.D., & Bronnert-Härle, H. (2020)	Mature School Cultures and New Leadership Practices—An Analysis of Leadership for Learning in German Comprehensive Schools	Journal of Educational Research	Germany	Analyzing leadership for learning in schools with a mature culture compared to schools with a young culture.	Quantitative, cross-sectional study; comparative analysis of leadership practices according to the age and culture of the school.	Instructional leadership and leadership practices for learning are less present in schools with a mature culture.

^a Principal Instructional Management Rating Scale

^b Principal's Instructional Leadership Practices and Teachers' Professional Development

^c Middle School Teacher Survey