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Implementation of Educational Human Resource Management In Improving The Quality of Learning

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ABSTRACT

This study aims to identify, analyze, and synthesize research findings on the implementation of human resource management (HRM) in education to improve learning quality. This study employed a Systematic Literature Review (SLR) approach using the PRISMA method. The data were obtained from 20 journal articles, indexed in Sinta and Scopus, published within the last five years, and selected for their relevance to educational HRM and learning quality. The findings show that educational HRM plays an important role in improving learning quality. However, its implementation remains limited and has not been fully integrated. The main issues include weak HR planning, non-competency-based recruitment, limited continuous professional development, and ineffective teacher performance evaluation. In addition, digitalization in the Education 4.0 era creates new challenges, particularly in preparing teachers to integrate technology into learning. The novelty of this study lies in its systematic synthesis of problem patterns, research trends, and gaps in educational HRM implementation, particularly in relation to teacher readiness and the improvement of learning quality. This study contributes by providing a comprehensive literature-based framework that can serve as a basis for future research and the development of more integrated HRM practices in education.

Keywords*: *digitalization, education, human resource management, learning, quality

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INTRODUCTION

Education plays a strategic role in developing the quality of human resources and determining a nation's competitiveness. In Indonesia, efforts to improve educational quality continue to face various challenges, particularly regarding the quality of educators and the effectiveness of human resource management in education. Several studies have shown that the quality of learning is influenced not only by curriculum design and learning facilities, but also by the way educational institutions manage teachers as key human resources. Issues such as unequal teacher quality, limited professional competence, inappropriate teacher placement, and uneven distribution of educators indicate that educational human resource management remains a crucial factor in improving learning quality (Supriatin et al., 2026; Miranti, 2025). This indicates a gap between the need for quality learning and the implementation of HR management in the field.

The role of human resource management in education becomes increasingly important in the digital era. The shift from conventional learning to online and technology-based learning requires teachers to possess not only pedagogical competence, but also digital competence, technological adaptability, and the ability to design interactive online learning experiences. However, many educators still face difficulties in integrating digital technology into teaching practices. Limited technological skills, insufficient training, and a lack of institutional support have led to suboptimal implementation of online learning (Nasution & Purnama, 2025). This condition shows that improving teachers' online learning skills cannot be separated from the effectiveness of human resource management practices in educational institutions.

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Previous studies have examined various aspects of human resource management in education, including teacher recruitment, placement, motivation, compensation, professional development, and performance evaluation. For example, studies have shown that recruitment and selection processes that are not based on competency analysis may lead to mismatches between teachers' qualifications and teaching assignments (Khalimah, 2024). Other studies have emphasized that low work motivation and inadequate incentives can reduce teacher performance and job satisfaction (Diva & Dewi Astuti, 2022). In addition, continuous professional development and effective performance evaluation have also been identified as important elements in improving teacher quality and learning outcomes (WiraBhakti, 2022; Agus et al., 2023).

Although these studies provide valuable insights, most examine educational human resource management in a general context. The discussion often focuses on teacher performance, institutional management, or learning quality in broad terms, while the specific relationship between human resource management practices and teachers' abilities in online learning has not been sufficiently synthesized. In particular, previous research has not fully mapped how HR management functions, such as planning, recruitment, training, development, motivation, supervision, and evaluation, support or hinder teachers' readiness and competence in conducting online learning.

Furthermore, existing studies remain fragmented in their explanations of the problems teachers face in online learning. Some studies focus on digital competence, others on pedagogical challenges, and others on institutional support or teacher motivation. However, these findings are often presented separately and have not been systematically integrated into a comprehensive framework. As a result, it remains unclear which HR management issues are most frequently discussed in the literature, what types of teacher competency gaps are most prominent, and how educational institutions can use HR management strategies to improve teachers' online learning capabilities.

This gap is important because online learning requires a different set of competencies from conventional classroom teaching. Teachers are expected to master digital platforms, design engaging virtual learning activities, manage online interactions, assess students using digital tools, and adapt learning methods to diverse student needs. Without systematic human resource management, these competencies may develop unevenly among teachers. Therefore, a comprehensive review is needed to identify how previous studies have addressed the connection between educational HR management and teachers' abilities in online learning.

Based on this research gap, this study aims to identify, analyze, and synthesize previous research on human resource management in education and teachers' abilities in online learning. Unlike previous studies that examine these issues separately, this study uses a Systematic Literature Review (SLR) approach, following the PRISMA guidelines, to provide a structured overview of the main themes, research trends, and unresolved issues in the literature over the past five years. Through this approach, the study is expected to clarify the role of educational HR management in supporting teachers' online learning competencies and to provide a stronger conceptual basis for future research and institutional policy development.

LITERATURE REVIEW

Human Resource Management

Human Resource Management (HRM) theory explains that organizational goals can be achieved effectively when human resources are managed through systematic functions, including planning, recruitment, selection, training and development, performance appraisal, and compensation. In the context of education, HRM places teachers and education personnel as strategic assets that directly influence the quality of learning. Therefore, educational institutions are not only required to provide curricula and facilities, but also to ensure that educators have the competencies, motivation, and professional support needed to deliver effective learning processes. Effective HRM becomes the foundation for improving teacher performance and educational quality (Prameswari & Sucitra, 2022).

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Fayol's Management Functions Theory

Fayol's management functions theory emphasizes that organizational effectiveness depends on the implementation of planning, organizing, commanding, coordinating, and controlling. In educational institutions, these functions are closely related to the management of educators. Planning is needed to determine teacher needs and competency standards. Organizing is required to place teachers according to their expertise. Commanding and coordinating are necessary to guide educators in carrying out learning activities. Meanwhile, controlling is used to evaluate teacher performance and ensure continuous improvement. If these functions are not implemented systematically, HRM practices may become fragmented and fail to support learning quality effectively (Supriatin et al., 2026).

Educational Quality

Educational quality theory views quality as the result of the interaction between input, process, and output. In this framework, teachers and education personnel are important inputs that determine the quality of the learning process and student learning outcomes. Learning quality is influenced not only by curriculum content, facilities, and technology, but also by educators' competence, professionalism, and performance. Therefore, the quality of education depends greatly on how educational human resources are planned, developed, supervised, and evaluated through an effective management system (Supriatin et al., 2026).

Synthesis of Theories and Conceptual Framework

The three theories complement one another in explaining the relationship between educational HRM and learning quality. HRM theory provides the foundation for understanding educators as strategic resources that must be managed professionally. Fayol's management functions theory explains the managerial process through which HRM practices are implemented in educational institutions. Meanwhile, educational quality theory explains the outcome of effective HRM: improvements in learning processes and educational outputs. Critically, these theories show that learning quality cannot be improved solely by increasing individual teacher competence. A systematic management process must support teacher competence. For example, teacher training will not have a significant impact if it is not preceded by proper HR planning, supported by appropriate placement, followed by effective coordination, and evaluated through a reliable performance appraisal system. Thus, the weakness of one management function can reduce the effectiveness of other HRM practices and ultimately affect the quality of learning.

Based on this synthesis, educational HRM can be understood as a strategic mechanism that connects managerial functions with educational quality improvement. HR planning, recruitment, professional development, performance evaluation, and compensation are not separate activities, but interrelated components that determine teacher readiness and performance. In the context of online learning, this relationship becomes more important because teachers are required to master digital competence, online pedagogy, and learning innovation. Therefore, integrating HRM theory, Fayol's management functions, and educational quality theory provides a conceptual framework for analyzing how educational institutions manage human resources to improve learning quality. This study uses the integrated framework to examine how HRM practices in education contribute to improving teacher competence and learning quality, particularly in online learning contexts. The framework also helps identify gaps in previous studies, especially regarding whether HRM practices have been implemented as an integrated system or remain partially implemented. From this perspective, the literature review not only describes each theory separately but also positions the theories as analytical tools for understanding the relationship among educational HRM, teacher capability development, and learning quality improvement.

Related Research

The study by Leithwood et al. (2020) examined the relationship between educational leadership and improvements in learning quality through HR management in schools. The results showed that the

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effectiveness of HR management, especially in developing teacher capacity and instructional leadership, significantly influences learning quality. This study emphasizes that teacher quality as part of human resources is a key factor in determining the success of the educational process.

The study by Darling-Hammond et al. (2017) examined how teacher professional development as part of educational HR management affects learning quality. The results showed that continuous, structured, and needs-based teacher development programs can improve pedagogical competence and teacher performance, thereby directly affecting student learning outcomes. This study highlights that weaknesses in HR management lead to lower learning quality in the classroom.

The two related studies above share similarities with the present study in that they both emphasize the importance of educational human resource management, particularly the role of teachers and leadership in influencing learning quality. In addition, both studies stress that learning quality is strongly determined by the effectiveness of competency development and by educator performance within HR management. However, the difference lies in the focus and research approach. The studies focus more empirically on leadership and professional teacher development, whereas the present study examines the implementation of educational HR management more comprehensively through an SLR approach using the PRISMA method. Therefore, the novelty of this study lies in its effort to systematically synthesize various research findings to identify patterns of problems, trends, and gaps in the implementation of educational HR management in relation to learning quality, which has not been widely examined in an integrated manner in previous studies.

METHOD

This study employed a Systematic Literature Review (SLR) approach, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, to examine the implementation of human resource management (HRM) in education to improve learning quality. The SLR method was selected because it enables researchers to systematically, transparently, and structurally identify, evaluate, and synthesize previous research findings. This method also supports the production of findings that are more objective and scientifically accountable (Page et al., 2021). The PRISMA approach was used to ensure that the literature selection process was conducted clearly, consistently, and replicably.

The use of the SLR method was driven by the need to provide a comprehensive overview of problems, trends, and research gaps in educational HRM. Previous studies on this topic are spread across different contexts, methods, and institutional settings. Therefore, SLR is appropriate because it allows researchers to integrate findings from multiple studies and identify patterns that may not be apparent in individual studies (Snyder, 2019). In this study, SLR was used not only to summarize previous findings but also to critically analyze how educational HRM practices are linked to learning quality.

The research followed the PRISMA guidelines, which consist of four main stages: identification, screening, eligibility, and inclusion. In the identification stage, articles were searched through Scopus, Sinta, and Google Scholar. The keywords used included "human resource management in education," "educational HRM," "teacher professional development," "teacher performance," and "learning quality." In the screening stage, duplicate articles were removed, and the remaining articles were reviewed based on titles and abstracts. The inclusion criteria were: articles published within the last five years, articles indexed in Sinta or Scopus, studies relevant to educational HRM and learning quality, and articles available in full text. The exclusion criteria were: articles unrelated to education, non-journal publications, duplicate studies, and articles that did not discuss HRM practices or learning quality in depth.

After the screening process, the eligibility stage was conducted by reviewing the full texts of the selected articles. At this stage, each article was examined to ensure its relevance to the research focus. Articles were considered eligible if they discussed at least one aspect of educational HRM, such as planning, recruitment, selection, training and development, performance appraisal, compensation, teacher competence, or learning quality. Articles that mentioned HRM or learning quality only briefly, without an analytical

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discussion, were excluded. The final stage was inclusion, in which 20 articles that met all criteria were selected as the main sources for analysis.

To strengthen the rigor of the review, this study applied an article quality assessment technique. Each selected article was assessed based on several indicators: clarity of research objectives, relevance to the research topic, appropriateness of research method, clarity of data sources, depth of analysis, strength of findings, and contribution to the discussion of educational HRM and learning quality. Articles that fulfilled most of these indicators were categorized as high-quality sources and included in the synthesis. This quality assessment was conducted to ensure that the analyzed articles were not only relevant but also methodologically appropriate and academically reliable.

Data validity was maintained through several strategies. First, source triangulation was applied by comparing findings across articles indexed in the databases Scopus, Sinta, and Google Scholar. Second, thematic consistency was ensured by grouping similar findings from different studies into the same analytical themes. Third, the selection and analysis process was conducted systematically using predetermined inclusion and exclusion criteria to reduce researcher bias. Fourth, the findings were interpreted by comparing similarities, differences, and contradictions among the reviewed studies. These steps were taken to ensure that the synthesis was valid, balanced, and supported by sufficient evidence.

Data analysis was conducted using thematic analysis. The findings from the selected articles were grouped into several main themes related to the implementation of educational HRM, including HR planning, recruitment and selection, teacher professional development, performance evaluation, compensation, digital competence, and learning quality. The analysis process involved data reduction, data presentation, and conclusion drawing. Data reduction involved selecting relevant information from each article. Data presentation was conducted by organizing the findings into thematic categories. Conclusion drawing was then performed by identifying patterns, relationships, and gaps across the reviewed studies.

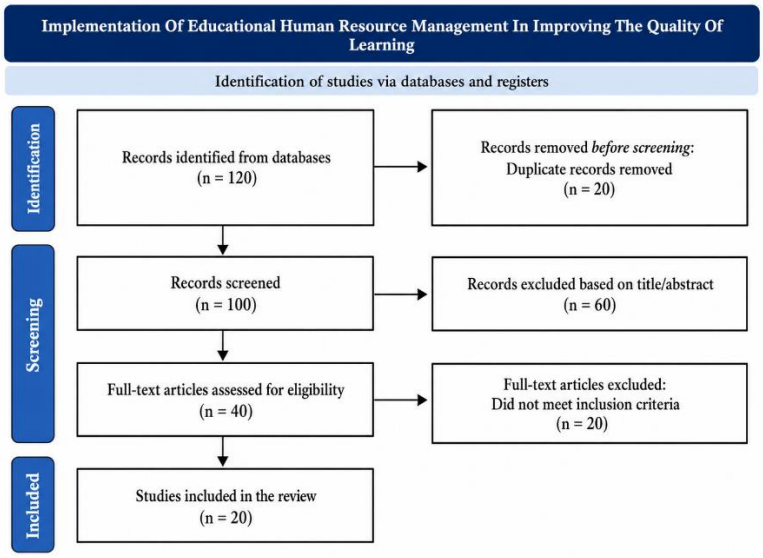


Figure 1. PRISMA Diagram

The PRISMA flowchart in this study illustrates the systematic literature selection process. In the identification stage, 120 articles were found from Scopus, Sinta, and Google Scholar. After duplicate articles were removed, 100 articles remained. In the screening stage, titles and abstracts were reviewed, and 60 articles were excluded as not relevant to the research focus. In the eligibility stage, 40 articles were reviewed in full text. From this number, 20 articles were excluded because they did not meet the inclusion criteria or did not

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provide sufficient discussion of educational HRM and learning quality. Finally, 20 articles were included as the main sources for analysis in this study.

RESULTS AND DISCUSSION

Results

A review of 20 articles indicates that educational human resource management (HRM) is significantly associated with learning quality. However, the relationship is not always direct or uniform across studies. Some studies show that HRM practices directly contribute to teacher performance and learning effectiveness, while others indicate that HRM's effects are mediated by factors such as teacher motivation, work engagement, leadership, professional development, and institutional support. This finding shows that educational HRM should not be understood merely as an administrative function, but as a strategic system that influences the quality of learning through various interconnected mechanisms.

Table 1. Presents the articles reviewed in this study and their relationship to the research focus

No	Authot (Year)	Topic	Similarities and Differences with This Study
1	(Pusvitasari, 2021)	HR Management Strategies in Improving the Quality of Education	Similar in discussing HR management and educational quality; different because it is a case study rather than a PRISMA-based SLR.
2	(Van Beurden et al., 2025)	The Relationship between Teachers' Perceptions of HR Practices and Work Engagement and Performance	Similar in its discussion of HR practices in schools, but different in that it focuses on engagement and performance.
3	(Rahayu, 2025)	The Contribution of HR Management to Improving Teacher Professionalism	Similar in its use of SLR and in its discussion of educational HRM, but different in that it focuses on teacher professionalism rather than learning quality.
4	(Galorio et al., 2024)	A Literature Review on HR Management in the Field of Education	Similar in its systematic examination of educational HRM, different in that its scope is more general.
5	(Kamau et al., 2021)	The Effect of HR Practices on Teachers' Intention to Move to Another School	Similar in discussing teacher HRM practices; different because it focuses on turnover intention.
6	(Leithwood et al., 2020)	Effective School Leadership: A Review of Concepts and Implementation	Similar in relation to school management and quality, but different because it focuses on school leadership.
7	(Popova et al., 2022)	Global Trends in Teacher Professional Development	Similar in its discussion of teacher development, but different because it focuses on global teacher training programs.
8	(Sims & Fletcher-Wood, 2021)	Characteristics of Effective Teacher Professional Development Programs	Similar in discussing teacher competency development, but different because it focuses on the characteristics of effective TPD.
9	(Amemasor et al., 2025)	The Impact of Teacher Professional Development on Technology Integration in Learning	Similar in using SLR and discussing teachers; different because it focuses on digital integration.

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No	Authot (Year)	Topic	Similarities and Differences with This Study
10	(Norman et al., 2025)	Management of Teacher Competency Improvement through Leadership and Digital Innovation	Similar in discussing teacher competence and quality; different in emphasizing leadership and digital innovation.
11	(Salmerón Aroca et al., 2022)	Teachers' Strategies in Facing and Optimizing Professional Development	Similar in discussing teacher professional development, but different because the context is a smart school.
12	(Metsäpelto et al., 2022)	A Multidimensional Learning Process Model in Education	Similar in discussing teaching competence; different because it focuses on a teacher competency model.
13	(Sariwani et al., 2025)	The Role of HR Management in Encouraging Teacher Professionalism in Private Schools	Similar in discussing HRM and teacher professionalism; different because it is a case study of private schools.
14	(Toropova et al., 2021)	Determinants of Teacher Job Satisfaction in the School Environment	Similar in relation to teachers' working conditions, but different because it focuses on job satisfaction.
15	(Ortan et al., 2021)	The Role of Self-Efficacy in Teacher Job Satisfaction and Well-Being	Similar in discussing teacher HR factors; different because it focuses on well-being and self-efficacy.
16	(Jerrim & Sims, 2022)	The Impact of School Accountability on Teacher Stress Levels	Similar in discussing teachers' work pressure, but different in focusing on accountability and stress.
17	(Pagán-Castaño et al., 2021)	The Effect of School Management on Teacher Well-Being and Educational Sustainability	Similar in discussing management and educational performance; different because it focuses on teacher well-being.
18	(Liu et al., 2021)	The Relationship between Instructional and Distributed Leadership and Teacher Self-Efficacy	Similar in terms of teacher management, different because it focuses on leadership styles.
19	(Page et al., 2021; Perrone, 2022)	Leadership Strategies for Teacher Retention	Similar in discussing teacher retention as an HR issue; different because it is a specific entry/review on retention.
20	Page et al. (2021)	PRISMA 2020 Guidelines for Reporting Systematic Reviews	Similar to the methodological basis for the PRISMA-based SLR, but different because it is not a study of educational HRM, but a methodological guideline.

The findings show that several studies support the HRM theory assumption that effective management of educators can improve organizational outcomes in schools. Studies by Pusvitasari (2021), Rahayu (2025), and Sariwani et al. (2025) emphasize that HRM practices contribute to educational quality through teacher professionalism, institutional management, and competency development. These findings confirm that teachers are strategic human resources whose performance determines the quality of the learning process. However, other studies show that HRM does not automatically improve learning quality if it is not supported by strong leadership, adequate welfare, and a positive work environment. For example, Toropova et al. (2021), Ortan et al. (2021), and Pagán-Castaño et al. (2021) indicate that teacher satisfaction, well-being, and self-efficacy are important conditions that influence the effectiveness of HRM practices.

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This difference suggests that educational HRM cannot be viewed as a single managerial activity. HRM practices such as recruitment, training, and evaluation may have a limited impact when teacher psychological and organizational conditions are ignored. In other words, HRM has a stronger effect on learning quality when it is implemented as an integrated system that considers both professional and personal dimensions of teachers. This finding expands HRM theory by showing that, in educational contexts, teacher welfare and work engagement function as important bridges between HRM policies and learning outcomes.

The review also shows that Fayol's management functions remain relevant in explaining the implementation of educational HRM. Studies by Leithwood et al. (2020) and Liu et al. (2021) emphasize the importance of leadership, coordination, and supervision in improving teacher performance and school effectiveness. These studies support the view that planning, organizing, coordinating, and controlling are essential in managing educators. However, there are differences in how leadership is positioned. Some studies view leadership as a central driver of HRM effectiveness, while others indicate that leadership alone is insufficient without professional development, supportive policy, and institutional resources. This means that leadership should not be treated as a substitute for HRM, but as one component within a broader HRM system. A critical difference also appears in studies on teacher professional development. Popova et al. (2022), Sims and Fletcher-Wood (2021), and Amemasor et al. (2025) agree that teacher development is important for improving learning quality. However, these studies differ in their emphasis. Some studies focus on the design and characteristics of effective professional development programs, while others focus on the role of professional development in technology integration. This indicates that teacher development is not only about providing training, but also about ensuring that training is relevant, continuous, practice-based, and aligned with teachers' real classroom needs. Short-term or incidental training may improve knowledge, but it does not necessarily change teaching practices or learning outcomes.

The reviewed studies also reveal a contradiction between the increasing demand for teacher competence and the limited institutional capacity to support teacher development. On the one hand, educational quality theory requires competent teachers as key inputs for effective learning processes and outcomes. On the other hand, many studies show that schools still face limitations in planning, funding, mentoring, and evaluating teacher development programs. This contradiction indicates a gap between the ideal concept of educational quality and the practical implementation of HRM in schools. Therefore, improving learning quality requires not only increasing teacher competence but also strengthening the institutional system that supports teacher competence development.

Another important finding concerns digitalization. Studies such as Amemasor et al. (2025), Norman et al. (2025), and Salmerón Aroca et al. (2022) show that digital transformation requires teachers to master technology integration, digital pedagogy, and learning innovation. However, digitalization also creates new inequalities among teachers. Teachers with greater access to training, infrastructure, and institutional support are more likely to adapt successfully, whereas those with limited support may experience difficulties. This indicates that digital transformation does not automatically improve learning quality. Without adaptive HRM, digitalization may widen competency gaps among teachers.

The synthesis of the 20 reviewed articles, therefore, shows three main patterns. First, educational HRM contributes to learning quality through teacher competence, professionalism, work engagement, and performance. Second, the effectiveness of HRM depends on integrating several management functions, including planning, recruitment, development, evaluation, leadership, and compensation. Third, digitalization has changed the demands of educational HRM by requiring stronger attention to teacher digital competence and online pedagogical skills. These patterns indicate that the main issue in educational HRM is not the absence of HRM practices, but rather the lack of integration among them.

DISCUSSION

The findings of this study show that the implementation of educational HRM has a decisive role in improving learning quality. However, the reviewed literature also demonstrates that the relationship between

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HRM and learning quality is complex. It is not enough to state that good HRM improves learning quality. The effect of HRM depends on how its components are designed, implemented, connected, and evaluated. This finding is important because many previous studies discuss HRM components separately, whereas this review shows that the weakness of a single component can reduce the effectiveness of the entire HRM system. From the perspective of HRM theory, the findings confirm that planning, recruitment, development, performance appraisal, and compensation are important for improving teacher performance. However, the review also shows that these functions are often implemented partially. For example, teacher development programs may be available, but they are not always based on systematic needs analysis. Performance evaluation may be conducted, but it is often administrative and not used as a basis for professional improvement. Recruitment may be carried out, but it is not always aligned with competency needs. This shows a gap between the theoretical logic of HRM and its practical implementation in educational institutions.

From the perspective of Fayol's management functions, the findings indicate that planning, organizing, coordinating, and controlling are necessary to ensure that HRM practices operate effectively. However, previous research differs in identifying which function is most influential. Leadership studies tend to emphasize coordination and supervision, while teacher development studies focus more on planning and implementation. This difference suggests that no single management function is sufficient to improve learning quality. Instead, learning quality improves when all management functions work together as a coherent system. The findings also provide a critical interpretation of educational quality theory. Educational quality is often explained in terms of the relationship among input, process, and output. In this framework, teachers are important inputs that determine the learning process and student outcomes. However, the reviewed articles show that teacher quality as an input is not fixed. It is shaped by HRM practices, leadership, work environment, professional development, and digital support. Therefore, educational quality should not be understood solely as the result of teacher competence, but rather as the outcome of how institutions manage and develop teacher competence over time.

A major contradiction found in the literature concerns the role of professional development. Several studies emphasize that professional development improves teacher competence and learning quality. However, other findings suggest that professional development may be ineffective when it is not continuous, not relevant to classroom needs, or not supported by school leadership. This contradiction shows that professional development should not be measured only by the existence of training programs. Its quality depends on continuity, relevance, follow-up, mentoring, and evaluation. Thus, professional development must be treated as part of a long-term HRM strategy, not as a temporary program. Another contradiction arises regarding performance evaluation. In theory, performance evaluation should help institutions monitor teacher performance and improve learning quality. However, the reviewed studies indicate that evaluations are often limited to administrative assessments. This weakens its function as a tool for professional development. If evaluation results are not used to design training, mentoring, or career development, then performance appraisal becomes a formal procedure rather than a mechanism for quality improvement. This finding shows that evaluation must be connected to other HRM functions to produce meaningful improvement.

Digitalization also provides an important area of critical discussion. The literature shows that educational digitalization can improve learning innovation, flexibility, and access to learning resources. However, the findings also show that digitalization creates new HRM challenges, especially regarding teacher readiness, digital literacy, infrastructure gaps, and online pedagogical competence. Therefore, digitalization should not be treated only as a technological issue. It is also an HRM issue because the success of technology-based learning depends on how institutions prepare, train, support, and evaluate teachers in their use of technology. The discussion also shows that the problem of educational HRM is systemic. Weak HR planning affects recruitment and placement. Inappropriate recruitment affects teacher competence. Limited professional development affects teaching quality. Weak evaluation prevents institutions from accurately identifying teacher needs. Low welfare and poor work conditions reduce motivation and engagement. These relationships

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show that the quality of learning cannot be improved through isolated interventions. A comprehensive and integrated HRM system is needed to address the interconnected nature of these problems.

Compared with previous individual studies, this PRISMA-based SLR provides a broader synthesis by identifying recurring patterns across different contexts. Previous studies often focus on one issue, such as leadership, teacher development, job satisfaction, digital competence, or teacher retention. This study integrates those findings and shows that these issues are not separate but part of a wider educational HRM system. The contribution of this study lies in showing that the central weakness of educational HRM is fragmentation. HRM practices exist, but they are not always connected in a strategic, sustainable framework. The findings indicate that improving learning quality requires educational institutions to move from partial HRM practices toward integrated HRM systems. Educational HRM should connect needs analysis, competency-based recruitment, continuous professional development, supportive leadership, fair compensation, meaningful evaluation, and digital competency development. In the context of Education 4.0, this integration becomes even more urgent, as teachers are required not only to teach effectively but also to adapt to digital learning environments. Therefore, improving learning quality depends on educational institutions' ability to manage teachers as strategic human resources in a systematic, adaptive, and sustainable manner.

CONCLUSIONS AND RECOMMENDATION

Based on the results of the PRISMA-based Systematic Literature Review (SLR), this study concludes that the implementation of human resource management (HRM) in education is strongly associated with learning quality. A synthesis of 20 journal articles shows that educational HRM contributes to learning quality through HR planning, recruitment, teacher competency development, performance evaluation, and educator readiness to face educational digitalization. However, the findings also indicate that HRM practices in education have not been implemented optimally. In many contexts, HRM is still carried out partially and has not yet become an integrated system that consistently supports the improvement of learning quality. The main problems identified in this study include weak HR planning, recruitment processes that are not fully competency-based, limited continuous professional development, ineffective performance evaluation systems, and inadequate teacher readiness in responding to technology-based learning. These findings confirm that improving learning quality cannot be separated from the effectiveness of educational HRM.

Therefore, the objective of this study has been achieved by identifying and synthesizing the main problem patterns, research trends, and gaps related to the implementation of educational HRM in improving learning quality. This study has several limitations. First, the review was limited to 20 journal articles indexed in Sinta and Scopus and published within the last five years, so the findings may not represent all studies on educational HRM. Second, this study used a literature review approach and did not collect primary empirical data from schools, teachers, or educational managers. As a result, the findings reflect patterns in previous research rather than direct evidence from field practice. Third, the reviewed studies came from different educational contexts, levels, and methodological approaches, which may influence the consistency of the synthesis. Fourth, this study focused primarily on HRM implementation and learning quality, so other factors, such as school culture, leadership style, policy implementation, infrastructure, and student characteristics, were not examined in depth. Based on these findings and limitations, educational institutions are encouraged to strengthen HRM implementation in a more systematic, integrated, and adaptive manner. Institutions need to improve HR planning, apply competency-based recruitment and placement, strengthen continuous teacher professional development, and optimize comprehensive performance evaluation systems.

In addition, educators' digital literacy and online pedagogical skills should be improved to support technology-based learning in the Education 4.0 era. For policymakers, the findings of this study suggest the need to develop policies that integrate teacher recruitment, professional development, digital competency improvement, and performance evaluation into a coherent HRM system. Policy support is also needed to reduce disparities in teacher competence and ensure that educational institutions have sufficient resources to

implement sustainable HR development programs. For future researchers, it is recommended to conduct empirical studies using qualitative, quantitative, or mixed-methods approaches to validate the findings of this review in real educational settings. Future studies may also compare HRM implementation across different levels of education, regions, or types of institutions. In addition, further research should examine the influence of leadership, organizational culture, infrastructure readiness, and policy implementation on the effectiveness of educational HRM in improving learning quality.

Credit authorship contribution statement

First Author: Conceptualization, Methodology, Systematic Literature Review, PRISMA flow design, Data collection, Formal analysis, and Writing (original draft). Second Author: Literature screening, Data curation, Validation, Resources, and Writing (review and editing). Last Author: Supervision, Project administration, Methodology validation, Formal analysis, and Final manuscript approval.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethical Declaration

All participants provided informed consent prior to their involvement in the study. They were informed about the study's purpose, procedures, and their right to withdraw at any time without consequence.

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