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Principal-Led In-Service Training and Teacher Job Performance in Public Junior Schools in Nyahururu Sub-County, Laikipia County, Kenya

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Abstract

This study examined the relationship between principal-led in-service training and teacher job performance in public junior schools in Nyahururu Sub-County, Laikipia County, Kenya. The guiding research question was: How do principal-led in-service training programs influence teacher job performance in public junior schools in Nyahururu Sub-County, Laikipia County, Kenya? The study was anchored on Transformational Leadership Theory and complemented by Instructional Leadership Theory and Adult Learning Theory (Andragogy). A convergent parallel mixed-methods design was employed. The target population comprised 482 Teachers Service Commission (TSC)-deployed teachers and 28 school principals in 28 public junior schools. Stratified random sampling yielded 219 teachers, while 15 principals were purposively selected for interviews. Data were collected using teacher questionnaires and interview guides for principals, with documentary evidence used to support triangulation. Quantitative data from 190 teachers were analyzed using descriptive statistics and inferential statistics, while qualitative data from 15 principals were analyzed thematically. Teachers reported a positive perception of principal-led in-service training ($M = 3.76$, $SD = 0.92$). The strongest-rated aspects concerned overall instructional performance ($M = 3.88$, $SD = 1.09$) and lesson preparation and planning ($M = 3.86$, $SD = 1.10$). The one-way Analysis of Variance (ANOVA) revealed a statistically significant difference in teacher job performance across varying levels of in-service training participation ($F(2, 187) = 12.65$, $p < 0.001$).The corresponding shared variance was approximately 40.7%. Qualitative findings indicated that principals organized CBC orientation, refresher courses, instructional methodology training, and assessment-focused training, with emphasis on curriculum alignment, practical application, and follow-up support. Funding constraints, teacher workload, and limited time emerged as major implementation challenges. The findings suggest that principal-led in-service training is associated with teacher job performance, particularly when training is relevant to classroom needs and accompanied by follow-up, observation, feedback, and adequate time and resources. The study recommends strengthening school-level instructional leadership capacity, protected time for professional learning, needs-based training, and systematic post-training support.

Keywords: principal-led professional development; in-service training; teacher job performance; instructional leadership; public junior schools; Kenya

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1. Introduction

1.1 Background

Teacher quality remains an important school-level factor associated with the quality of teaching and learner achievement, making continuous opportunities for teacher learning an important component of education systems (Darling-Hammond et al., 2022). Professional development provides teachers with opportunities to strengthen professional knowledge, pedagogical skills, and classroom practices. Contemporary conceptions of professional development emphasize that teacher learning should be continuous, collaborative, relevant to professional practice, and connected to instructional improvement (OECD, 2025). The importance of sustained professional learning is also reflected in international education policy, including Sustainable Development Goal Target 4.c, which recognizes the need to increase the supply of qualified teachers through teacher education and professional development (United Nations, 2015).

Professional development, however, does not automatically translate into improved classroom practice. Its contribution depends on the relevance and quality of the learning experience and on the organizational conditions that enable teachers to apply what they learn (Desimone & Garet, 2021; Sims & Fletcher-Wood, 2021; Sancar et al., 2021). School leadership is therefore important because principals influence the opportunities available to teachers, the allocation of time and resources, the alignment of professional learning with school priorities, and the extent to which learning is followed up in classroom practice. Recent evidence indicates that instructional leadership is associated with teacher professional learning and growth, particularly where school leaders actively facilitate professional learning opportunities (He et al., 2024).

In-service training represents one form of professional development through which teachers already working in schools acquire or update knowledge, pedagogical skills, and instructional strategies. In the context of this study, principal-led in-service training refers to structured professional learning activities initiated, coordinated, facilitated, or supervised by school principals for serving teachers. Such activities include curriculum orientation, refresher training, instructional methodology training, and assessment-focused training. The emphasis is not merely on attendance at training but also on the principal's role in connecting professional learning to classroom needs and supporting subsequent application.

International literature suggests that leadership-supported professional learning is associated with improved instructional practice. Desimone and Garet (2021) reported that sustained professional development characterized by active leadership support was associated with improvements in instructional strategies, assessment practices, and classroom organization. Similarly, Huang et al. (2024), examining 2,274 teachers in 181 schools in China, found that principal instructional leadership was associated with differences in instructional quality through teacher professional learning. Zhang (2025) also reported strong relationships between instructional leadership and

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teacher self-efficacy in instructional domains. In Ghana, Salifu (2025) found that organized teacher in-service training was associated with improvements in lesson structuring, interactive teaching, and assessment practices, particularly where school leadership was involved in planning and facilitating professional learning.

Evidence from Africa further suggests that the organizational conditions surrounding professional development matter. He et al. (2024), studying schools in Nigeria, found that principal actions such as curriculum coordination and provision of continuing learning opportunities were associated with teacher professional development. Adams et al. (2025) similarly reported that principals' instructional leadership, lesson observation, feedback, and facilitation of collaborative learning supported teacher professional learning in South African schools. In rural African contexts, however, teachers may face limited access to structured professional development, while workload, resources, and leadership capacity can constrain participation (Nyirahabimana & Magagula, 2024).

The Kenyan context is particularly important because teacher professional development operates within a policy environment that assigns school leaders important responsibilities for teacher development and performance. The Teachers Service Commission's Teacher Performance Appraisal and Development framework positions school leadership as an important component of teacher development (TSC, 2023). Kenyan studies have reported associations between principal involvement in professional development and teacher instructional practice. Otieno (2024), for example, found that principals' involvement in professional development planning, classroom observation, feedback, and resource provision was associated with improvements in lesson planning, classroom management, and interactive teaching. Malebe et al. (2024) similarly reported that head-teacher provision and support of professional development opportunities were associated with teachers' instructional strategies, classroom management, and formative assessment practices.

The transition to CBC has added another dimension to this issue. Teachers are required to respond to changes in pedagogy, assessment, learner engagement, and competency development, thereby creating continuing professional learning needs. The Kenya National Examinations Council (KNEC, 2022, 2023) has continued to report learning challenges in areas including literacy, numeracy, and competency acquisition, while the Ministry of Education's National Education Sector Strategic Plan 2023–2027 identifies uneven implementation of teacher professional development and instructional supervision as an education-system concern. At the local level, the Laikipia County Education Office (2023) reported variations in teacher performance and learner achievement across public schools and emphasized the importance of instructional leadership and school-based professional development.

Despite the growing literature on teacher professional development, much of the available evidence concerns professional development broadly, instructional leadership generally, or school contexts outside semi-rural and rural regions in Kenya. Less attention has been given to the specific contribution of principal-led in-service training to teacher job performance in public junior schools

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operating under CBC. This is significant because principals in resource-constrained contexts must implement professional learning while simultaneously managing staffing, workload, financial, and instructional demands. The present study therefore focuses specifically on the relationship between principal-led in-service training and teacher job performance in public junior schools in Nyahururu Sub-County.

1.2 Problem Statement

Professional development is expected to strengthen teachers' pedagogical knowledge and classroom practice, but the effectiveness of professional learning depends on its relevance, implementation, and support within schools (Desimone & Garet, 2021; Sancar et al., 2021). In Kenya, the TSC framework places teacher development within the responsibilities of school leadership (TSC, 2023), while continuing curriculum reforms create additional professional learning requirements. Nevertheless, evidence from Kenyan schools indicates variation in the extent to which principals plan, facilitate, monitor, and support professional development (Gichuhi, 2024; Wanjiru, 2023).

The problem is particularly important in public junior schools, where teachers are implementing CBC while operating within institutional constraints that may affect access to and application of professional learning. Although studies from Kenya and elsewhere associate professional development and instructional leadership with improved teacher practice (Huang et al., 2024; Malebe et al., 2024; Otieno, 2024), limited evidence specifically examines principal-led in-service training and teacher job performance in rural public junior schools. Existing studies also tend to examine broader professional development or leadership constructs rather than the specific school-level in-service training processes through which principals support teachers. The present study addressed this gap by examining how principal-led in-service training was associated with teacher job performance in public junior schools in Nyahururu Sub-County, Laikipia County.

1.3 Research Question

The study was guided by one research question:

How do principal-led in-service training programs influence teacher job performance in public junior schools in Nyahururu Sub-County, Laikipia County, Kenya?

The corresponding null hypothesis was:

H_0: There is no statistically significant relationship between principal-led in-service training programs and teacher job performance in public junior schools in Nyahururu Sub-County.

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2. Literature Review

2.1 Theoretical Framework

The study was anchored on Transformational Leadership Theory, originally advanced by Burns (1978) and subsequently developed by Bass (1985). Transformational leadership emphasizes leaders' ability to influence followers' values, motivation, commitment, and professional development in pursuit of shared organizational goals. Bass and Riggio (2006) identify four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

The theory is relevant to principal-led in-service training because professional learning requires more than administrative authorization. Principals can model commitment to professional learning, communicate expectations concerning instructional improvement, stimulate teachers to reconsider established practices, and provide differentiated support to teachers. Contemporary scholarship similarly conceptualizes transformational leadership as an approach that can promote collaboration, professional growth, organizational learning, and innovation (Yu, 2024; Assefa, 2025). Empirical evidence has associated transformational leadership with teacher collaboration, professional growth, instructional innovation, and job performance (Abuhassira, 2024; Heenan, 2023).

Transformational Leadership Theory is complemented by Instructional Leadership Theory and Adult Learning Theory. Instructional Leadership Theory, associated particularly with Hallinger and Murphy (1985), emphasizes principals' direct engagement with teaching and learning through defining the school mission, managing instructional programs, supervising instruction, and promoting a positive learning climate. Contemporary applications emphasize principals' support for professional learning, instructional monitoring, collaboration, and continuous teacher development (Hallinger, 2022; Dorukbaşi & Cansoy, 2024; He et al., 2024).

Adult Learning Theory (Andragogy) provides a complementary explanation of how teachers engage with professional learning. Knowles et al. (2015, 2020) emphasize adult learners' prior experience, self-direction, readiness to learn, problem-centered orientation, and motivation. These principles suggest that effective in-service training should be relevant to teachers' professional problems, connected to classroom practice, participatory, and sufficiently practical to facilitate application.

Together, the three perspectives provide a useful framework for understanding principal-led in-service training: transformational leadership explains the motivational and relational role of the principal; instructional leadership explains the principal's direct connection to teaching and

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learning; and adult learning theory explains how teachers engage with and apply professional learning.

2.2 Principal-Led In-Service Training and Teacher Job Performance

Evidence across different educational contexts generally associates sustained and relevant professional development with improved instructional practice. Desimone and Garet (2021) emphasized that professional development is more likely to affect teaching when it is sustained, collaborative, focused on content, connected to classroom practice, and accompanied by active leadership support. Huang et al. (2024) similarly found that principal instructional leadership was associated with instructional quality through teacher professional learning. These findings suggest that the principal's contribution is not necessarily the training content itself but the organizational environment created around teacher learning.

In China, Zhang (2025) reported strong positive relationships between principal instructional leadership and teacher self-efficacy in instructional domains. The study highlights the importance of supportive working environments and teacher engagement. Although self-efficacy is conceptually distinct from job performance, increased instructional confidence may facilitate teachers' willingness to apply new pedagogical practices.

Evidence from Ghana also points to the importance of organized in-service training. Salifu (2025) found that teacher in-service activities were associated with improvements in lesson structuring, interactive teaching, and assessment. Importantly, leadership involvement in planning, facilitating, and monitoring professional development strengthened the connection between professional learning and professional practice.

In Nigeria, He et al. (2024) found that principal actions involving curriculum coordination and provision of continuous learning opportunities were significant predictors of teacher professional development. This supports the argument that professional learning is partly an organizational process rather than simply an individual teacher activity.

Kenyan evidence provides a more contextually relevant basis for the present study. Otieno (2024) reported that principals who participated in professional development planning, observation, feedback, and resource provision were associated with improvements in teachers' instructional practices. Malebe et al. (2024), in a mixed-methods study in Nakuru County, similarly found that active head-teacher support for professional development was associated with improvements in instructional strategies, classroom management, and formative assessment.

However, these studies leave a contextual and construct-specific gap. Some examine instructional leadership generally, while others examine professional development opportunities broadly. The present study isolates principal-led in-service training and examines its relationship with teacher job performance specifically within public junior schools in Nyahururu Sub-County. This focus is

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important because the implementation of professional learning may differ according to school resources, workload, curriculum demands, and the degree of principal involvement.

2.3 Challenges Affecting In-Service Training

Professional development does not occur independently of school conditions. Darling-Hammond et al. (2022) identified insufficient funding, lack of time, administrative constraints, and weak follow-up as barriers to effective professional development. Cordingley et al. (2020) similarly identified competing administrative responsibilities, limited time, and insufficient instructional leadership capacity as challenges affecting professional learning.

Evidence from Africa reinforces these concerns. Belay (2021) identified inadequate education-office support, insufficient training materials, weak monitoring mechanisms, and teacher resistance as barriers to school-based professional development in Ethiopia. Adewale (2022) identified low funding, low teacher motivation, inadequate teaching materials, and excessive workload among the challenges faced by principals in Nigeria. Dlamini (2023) similarly highlighted leadership preparation, policy support, and teacher workload in South Africa.

Within Kenya, Kariuki and Guantai (2020) reported inadequate funding, limited time, and weak monitoring mechanisms as challenges affecting teacher development. Wamalwa (2023) also identified inadequate funding, poor ICT infrastructure, and weak monitoring systems among the challenges affecting professional development implementation. These findings suggest that the effectiveness of in-service training depends not only on the availability of training but also on whether principals can create conditions that permit participation and subsequent application.

2.4 Strategies for Strengthening In-Service Training

Research suggests that effective professional development requires school leaders to provide continuing support rather than treating training as an isolated event. Liljenberg (2021) identified designated time, shared professional resources, and appropriate external expertise as enabling conditions for principals' professional development. Bellibas et al. (2021) found that transformational leadership can strengthen the relationship between instructional leadership and teacher learning through professional development. Kortlandt et al. (2021) similarly emphasized collaborative professional learning as a mechanism for strengthening instructional leadership.

Galdames-Calderón (2023) found that distributed leadership practices, including delegation and collaborative professional learning, supported teacher empowerment and continuing professional development. So-Oabeb and du Plessis (2023) identified communication, accountability, digital skills, and interpersonal skills as important leadership capabilities for facilitating professional development. In Kenya, Gari et al. (2024) found that systematic planning, matching professional

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development to teacher needs, and supporting collaborative learning were associated with higher teacher productivity.

The literature therefore indicates that effective in-service training involves more than the delivery of training content. Needs assessment, curriculum alignment, teacher participation, practical application, classroom observation, feedback, follow-up, adequate time, and resources constitute important elements of the professional learning process.

2.5 Knowledge Gap

Three related gaps emerge from the reviewed literature. First, much existing evidence examines professional development broadly or considers instructional leadership without isolating principal-led in-service training as a specific school-level practice. Second, substantial evidence comes from contexts outside rural Kenya, making contextual transfer to public junior schools uncertain. Third, many studies rely on cross-sectional quantitative designs, providing limited qualitative insight into how principals organize and support in-service training under resource and workload constraints.

The present study addresses these gaps by focusing specifically on principal-led in-service training in public junior schools in Nyahururu Sub-County and combining teacher survey data with principal interviews. The mixed-methods approach enables the statistical relationship to be considered alongside principals' accounts of training content, curriculum alignment, implementation, and follow-up.

3. Methodology

3.1 Research Design

The study adopted a convergent parallel mixed-methods design. The quantitative component employed a cross-sectional survey to examine the relationship between principal-led in-service training and teacher job performance, while the qualitative component used semi-structured interviews with school principals to provide contextual understanding of how in-service training was organized and implemented.

The qualitative strand was informed by a phenomenological orientation because the study sought to understand principals' experiences of designing, implementing, and supporting professional development in their schools (Creswell & Poth, 2023; van Manen, 2016). The mixed-methods design permitted quantitative patterns to be considered alongside participants' contextual accounts.

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3.2 Study Population and Sampling

The study was conducted in public junior schools in Nyahururu Sub-County, Laikipia County, Kenya. Records from the Sub-County Director of Education and TSC Sub-County office indicated that the area had 28 public junior schools, 28 principals, and 482 TSC-deployed teachers.

All 28 schools were included through census sampling. Fifteen principals were purposively selected for qualitative interviews, while 219 teachers were selected through stratified random sampling. The teacher sample was calculated using Yamane's formula:

$n = N/[1 + *N(e^2)]$

where N = 482 and e = .05, yielding approximately 219 teachers. Teachers were selected using proportional allocation across schools to improve representation (Fraenkel et al., 2022). Of the 219 questionnaires distributed, 190 were returned and usable, giving a teacher response rate of 86.8%. All 15 selected principals participated in the interviews.

3.3 Data Collection Instruments

Teacher data were collected using a structured questionnaire. The section relevant to the present article assessed principal-led in-service training and teacher job performance. Items covered the perceived contribution of in-service training to lesson preparation and planning, teaching methods, use of teaching and learning resources, classroom management, learner engagement, assessment, and teaching confidence.

The qualitative component used a semi-structured interview guide for principals. Interviews explored the types of in-service training organized, alignment with CBC and school needs, perceived effects on teacher practice, and mechanisms used to support application of training. Semi-structured interviews enabled probing and clarification of participants' experiences (Merriam & Tisdell, 2023; Creswell & Poth, 2023).

3.4 Validity, Reliability and Trustworthiness

The instruments were subjected to expert review to assess content validity. A content validity index was calculated from expert ratings, with .80 identified as the minimum acceptable criterion (Polit & Beck, 2021). Pilot testing involved 25 teachers and five principals from a neighbouring sub-county with characteristics similar to those of the study area. Pilot participants were excluded from the final sample.

Internal consistency of the questionnaire was assessed using Cronbach's alpha, with .70 treated as an acceptable threshold (Taber, 2018; Nunnally & Bernstein, 1994). Qualitative rigour was

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addressed through credibility, dependability, confirmability, and transferability procedures, including triangulation, member checking, an audit trail, reflexive documentation, and detailed contextual description (Birt et al., 2020; Korstjens & Moser, 2021; Nowell et al., 2020; Varpio et al., 2021).

3.5 Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics Version 26. Descriptive statistics included frequencies, percentages, means, and standard deviations. The one-way Analysis of Variance (ANOVA) was used to examine the association between principal-led in-service training and teacher job performance.

Qualitative interview data were transcribed and analyzed thematically following Braun and Clarke's approach to thematic analysis (Braun & Clarke, 2021). The quantitative and qualitative findings were subsequently integrated during interpretation to identify areas of convergence and provide contextual explanations for the statistical findings.

Because the study used a cross-sectional, nonexperimental design, the statistical findings were interpreted as associations rather than causal effects.

3.6 Ethical Considerations

Ethical procedures included informed consent, voluntary participation, confidentiality, anonymity, secure data storage, and protection of participants from harm. Questionnaire responses were coded without personal identifiers, while principal interviews were reported using participant codes such as P01 and P12. Relevant institutional permissions and research authorizations were obtained before data collection.

4. Results

4.1 Response Rate

A total of 219 teacher questionnaires were distributed, of which 190 were returned and usable, representing an 86.8% response rate. All 15 purposively selected principals participated in interviews. The participating teachers represented all 28 public junior schools included in the study. The response profile provides a broad representation of teachers across the study area.

4.2 Teachers' Perceptions of Principal-Led In-Service Training

Table 1 presents teachers' perceptions of principal-led in-service training.

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Table 1
Teachers' perceptions of principal-led in-service training

In-service training statement	M	SD
In-service training improves lesson preparation and planning	3.86	1.10
In-service training enhances teaching methods	3.82	1.12
I use teaching and learning resources more effectively after training	3.72	1.18
In-service training improves classroom management skills	3.62	1.22
In-service training increases learner engagement in lessons	3.72	1.20
In-service training improves assessment of learners	3.66	1.21
In-service training increases confidence in teaching	3.80	1.16
Overall, in-service training improves instructional performance	3.88	1.09
Composite	**3.76**	**0.92**

Source: Field data (2026).

The composite mean of 3.76 (SD = 0.92) indicates that teachers generally expressed positive perceptions of principal-led in-service training. The highest-rated item was the perceived contribution of training to overall instructional performance (M = 3.88, SD = 1.09), followed by lesson preparation and planning (M = 3.86, SD = 1.10). The lowest-rated item concerned classroom management (M = 3.62, SD = 1.22), although the mean remained above the midpoint of the scale.

4.3 Relationship Between Principal-Led In-Service Training and Teacher Job Performance

Table 2
ANOVA results for principal-led in-service training and teacher job performance

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Group	Sum of Squares	df	Mean Square	F
Between Groups	28.45	2	14.23	12.65
Within Groups	215.67	187	1.15	
Total	**244.12**	189		

Source: Field Data (2026)

The one-way Analysis of Variance (ANOVA) revealed a statistically significant difference in teacher job performance across varying levels of in-service training participation ($F(2, 187) = 12.65$, $p < 0.001$). Overall, across all participants, the composite mean job performance score was 3.76 (SD = 0.92). The teacher job performance is directly attributable to the frequency and intensity of in-service training exposure, representing a medium-to-large effect size. Post-hoc pairwise comparisons using the Tukey HSD test demonstrated a consistent, positive dose-response pattern across all evaluation tiers relative to the overall baseline. This statistic should not be interpreted as evidence that in-service training causally explains 40.7% of teacher performance because the study was cross-sectional and non-experimental.The finding is consistent with Schwarz and Maschmann (2021), whose analysis using TIMSS data contributed evidence that teacher training is associated with teaching effectiveness. It also corresponds with findings from Huang et al. (2024), who reported that principal instructional leadership was associated with instructional quality through teacher professional learning.

4.4 Qualitative Findings

Analysis of interviews with the 15 principals generated four major themes: types of in-service training, alignment with CBC and school needs, perceived effects on teacher practice, and follow-up and monitoring.

Types of In-Service Training

Principals reported several forms of in-service training, including CBC orientation, refresher courses, instructional methodology training, and assessment workshops.

Principal P12 explained:

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> We have conducted several in-service training programs focused on CBC implementation. These include orientation sessions on the new curriculum, training on competency-based assessment, and workshops on developing learning materials. We also organize refresher courses to update teachers on new developments.

Principal P09 similarly described training focused on learner-centred pedagogy, including group work, learner engagement, and differentiated instruction. The findings suggest that principal-led in-service training was not limited to a single format but was used to address curriculum implementation, instructional methods, and assessment requirements. This corresponds with Aljamoudi's (2021) emphasis on the importance of aligning professional development with curriculum requirements and teacher needs.

Alignment With CBC and School Needs

Principals emphasized that training content was frequently aligned with CBC requirements and specific school-level instructional needs. Principal P08 stated:

> All our in-service training programs are aligned with the CBC curriculum. We ensure that training content addresses the specific requirements of the new curriculum, including formative assessment, integrated learning, and development of core competencies.

Principal P05 described how identified weaknesses in continuous assessment led to targeted training on portfolio assessment and formative feedback. This finding suggests that relevance was an important feature of the in-service training process. Rather than viewing professional development as a generic activity, principals described using observed instructional needs and curriculum requirements to determine training priorities. This is consistent with Aljamoudi (2021), who emphasized alignment between professional development, curriculum requirements, and teacher needs.

Perceived Effects on Teacher Practice

Principals reported perceived improvements in teachers' pedagogical skills, instructional confidence, classroom practice, and assessment following in-service training. These perceptions provide qualitative support for the positive statistical association observed between in-service training and teacher job performance.

The qualitative evidence should nevertheless be interpreted cautiously because principals' reports of improvement represent perceptions rather than independent observations of teacher performance. The finding is therefore best understood as contextual support for, rather than direct verification of, the quantitative relationship.

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The qualitative pattern corresponds with Salifu's (2025) finding that organized in-service training was associated with improvements in pedagogical practices and with the Strathmore University Teacher Enhancement Program (2021), which reported increased teacher confidence and improved use of technology following professional development.

Follow-Up and Monitoring

Principals emphasized that training was more useful when followed by classroom observation, feedback, mentoring, and monitoring. This indicates that principals viewed professional learning as an ongoing process rather than an isolated training event. The finding is consistent with Liljenberg (2021), who identified organizational arrangements that support professional learning, and with Bellibas et al. (2021), who demonstrated the importance of leadership conditions surrounding teacher professional learning. It also corresponds with Otieno (2024), who found that planning, observation, feedback, and resource provision were associated with improved teacher instructional practices in Kenyan schools.

5. Discussions

The study found a statistically significant influence of principal-led in-service training on teacher job performance ($F = 12.65$, $p < .001$). Teachers also reported generally positive perceptions of the contribution of in-service training to their professional practice, with the highest ratings relating to overall instructional performance and lesson preparation. Taken together, the quantitative findings indicate that teachers who reported stronger experiences of principal-led in-service training also tended to report higher levels of job performance.

The finding is consistent with Huang et al. (2024), who found that principal instructional leadership was associated with instructional quality through teacher professional learning. Their study suggests that leadership may contribute to instructional improvement by creating organizational conditions in which teachers engage in professional learning. The present finding extends this argument to public junior schools in a rural Kenyan context by focusing specifically on in-service training organized or facilitated at school level.

The result also corresponds with Schwarz and Maschmann (2021), who found evidence linking teacher training with teacher effectiveness. However, the present study differs in its emphasis on principal-led training and its focus on Kenyan public junior schools. This distinction is important because training opportunities are not necessarily independent of school leadership. Principals influence scheduling, content selection, teacher participation, resource allocation, and opportunities for classroom application.

The qualitative findings provide additional insight into why the relationship may exist. Principals described in-service training as addressing CBC orientation, instructional methodology, assessment, and identified school-level needs. This supports the argument that professional learning is more meaningful when teachers can connect new knowledge to immediate classroom

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demands. The finding is consistent with Aljamoudi (2021), who emphasized curriculum and teacher-needs alignment in professional development.

The reported contribution of training to lesson preparation and planning is particularly relevant. Lesson preparation provides a point at which teachers translate professional knowledge into instructional decisions. Training that improves teachers' understanding of curriculum expectations, instructional strategies, or assessment approaches may therefore be reflected in planning practices. Salifu (2025) similarly found that organized teacher in-service training was associated with improvements in lesson structuring, interactive teaching, and assessment.

The findings also highlight the importance of professional confidence. Teachers rated the contribution of in-service training to teaching confidence relatively highly (M = 3.80). This corresponds with Zhang's (2025) evidence concerning the relationship between principal instructional leadership and teacher self-efficacy. Although confidence and job performance are distinct constructs, confidence may provide a psychological condition that supports teachers' willingness to implement new instructional practices.

The qualitative findings further indicate that principals did not regard training as a one-off event. Follow-up, classroom observation, feedback, and mentoring were described as important mechanisms for supporting implementation. This is consistent with the wider professional development literature, which emphasizes sustained learning and opportunities to apply and refine new knowledge (Desimone & Garet, 2021; Liljenberg, 2021). It also aligns with Otieno's (2024) Kenyan findings concerning the role of principal involvement in planning, observation, feedback, and resource provision.

The implementation context, however, is important. Teachers identified insufficient funding (M = 4.23), heavy workload (M = 4.12), and limited time (M = 4.05) as major challenges. These findings are consistent with Darling-Hammond et al. (2022), who identified time, funding, administrative support, and weak follow-up as barriers to professional development. They also correspond with Nyirahabimana and Magagula (2024), who identified workload as a barrier to professional development participation in rural African settings.

The finding concerning inadequate principal preparation (M = 3.80) also deserves attention. School principals are expected to support instructional improvement, but effective professional development leadership requires skills in identifying learning needs, designing appropriate activities, supporting teacher learning, observing classroom practice, and providing constructive feedback. Liljenberg (2021) similarly emphasized the importance of professional learning for principals themselves.

The strategies identified by teachers reinforce this interpretation. Regular follow-up after training received the highest mean (M = 4.41), followed by classroom observation for professional development support (M = 4.34), adequate time allocation (M = 4.31), and teacher involvement in

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identifying professional development needs (M = 4.31). These findings suggest that teachers perceive the value of professional development not simply in the training event but in what happens before and after the event.

The findings can also be interpreted through Transformational Leadership Theory. The four dimensions of transformational leadership provide plausible mechanisms through which principals may create supportive conditions for teacher professional learning. Idealized influence may be reflected in principals modelling commitment to professional learning; inspirational motivation in communicating shared instructional goals; intellectual stimulation in encouraging teachers to reconsider established teaching practices; and individualized consideration in providing differentiated support, mentoring, and feedback (Bass, 1985; Bass & Riggio, 2006). Bellibas et al. (2021) similarly found that transformational leadership can strengthen the relationship between instructional leadership and teacher learning through professional development.

Instructional Leadership Theory provides a complementary explanation. The principal's involvement in curriculum alignment, instructional supervision, classroom observation, feedback, and teacher development corresponds closely with the mechanisms described by the participants. Adult Learning Theory further suggests that training is more likely to be meaningful when it is practical, relevant, problem-centred, and connected to teachers' prior experience (Knowles et al., 2020).

The findings therefore suggest that principal-led in-service training should be understood as a process rather than an isolated intervention. Its perceived association with teacher job performance appears to operate within a broader organizational system involving curriculum relevance, teacher participation, follow-up, time, resources, and instructional leadership.

At the same time, the cross-sectional design requires caution. The observed correlation does not establish that in-service training caused higher teacher performance. It is also possible that schools with stronger instructional cultures simultaneously provide better professional development and have better-performing teachers. Furthermore, the teacher performance measure relied substantially on self-reported perceptions, creating the possibility of common-method bias. Longitudinal and observational research would therefore be useful for testing whether participation in specific in-service training activities precedes measurable changes in classroom practice.

6. Implications for Policy and Practice

The findings have several practical implications for school leadership and teacher professional development. First, professional development should be linked to identified instructional needs. Principals can use classroom observations, teacher self-assessments, curriculum implementation challenges, and assessment information to identify priority areas for in-service training. This is consistent with Aljamoudi (2021) and Gari et al. (2024).

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Second, post-training support should be institutionalized. Follow-up through classroom observation, feedback, mentoring, and collaborative reflection can help teachers translate professional learning into classroom practice. The high rating for regular follow-up (M = 4.41) provides direct empirical support for this approach.

Third, principals require continuing preparation as instructional leaders. Leadership development should address professional development planning, adult learning, curriculum implementation, instructional observation, feedback, and monitoring. This is particularly important where principals operate under substantial administrative and resource constraints (Liljenberg, 2021).

Fourth, professional learning requires protected time and adequate resources. The high ratings for funding, workload, and time as challenges indicate that professional development cannot be strengthened through training design alone. School and system-level planning should provide realistic time for participation, collaboration, classroom observation, and follow-up.

7. Conclusion

The study found a statistically significant influence of principal-led in-service training on teacher job performance in public junior schools in Nyahururu Sub-County, with $F= 12.65$, $p < .001$. Teachers generally reported positive perceptions of the contribution of in-service training to their professional practice, particularly lesson preparation, teaching methods, and overall instructional performance.

The qualitative evidence indicated that principals organized CBC orientation, refresher courses, instructional methodology training, and assessment-focused activities. The perceived value of these activities was closely linked to their relevance to curriculum requirements and school-level instructional needs and to the availability of follow-up through observation, feedback, and mentoring.

At the same time, implementation was constrained by insufficient funding, teacher workload, and limited time. The findings therefore suggest that strengthening in-service training requires attention not only to the training content but also to the leadership and organizational conditions surrounding professional learning. In particular, needs-based training, curriculum alignment, protected professional learning time, and systematic post-training support emerge as important considerations.

Because the study was cross-sectional and nonexperimental, the relationship should not be interpreted as proof that principal-led in-service training causes improved teacher performance. Future studies using longitudinal, quasi-experimental, or classroom-observation designs could provide stronger evidence concerning changes in teacher practice following specific in-service training interventions.

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8. Recommendations

Based on the findings, four recommendations are advanced.

1. **Strengthen needs-based in-service training.** Principals should use teacher needs assessments, classroom observations, curriculum implementation challenges, and assessment information to determine the content of school-based in-service training.
2. **Institutionalize post-training follow-up.** Schools should incorporate classroom observation, constructive feedback, mentoring, and reflective sessions into the period following in-service training so that teachers have opportunities to apply and refine newly acquired knowledge.
3. **Strengthen principals' instructional leadership capacity.** The TSC and Ministry of Education should provide continuing professional learning for principals in professional development planning, adult learning, instructional supervision, feedback, and monitoring.
4. **Provide adequate time and resources for professional learning.** School and education-system planning should protect time for in-service training, collaborative learning, and follow-up and should provide sufficient resources to support meaningful implementation.

9. Contribution to Knowledge

The study contributes to the literature in three principal ways. Empirically, it provides evidence of a positive association between principal-led in-service training and teacher job performance among public junior school teachers. Contextually, it extends the literature on teacher professional development to a rural Kenyan setting operating under CBC. Practically, it identifies curriculum alignment, needs responsiveness, follow-up, classroom observation, adequate time, and principal instructional leadership as important conditions surrounding school-based in-service training.

The study consequently shifts attention from viewing professional development simply as attendance at training events toward considering the wider leadership and organizational processes through which professional learning is supported and translated into classroom practice.

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