Journal of Africana Articles, ISSN 0002-0281 4(48), 1-19, 22th September 2026
https://journalarticles.africanaarticles.co.ke

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Effectiveness of In-Service Training Programmes on Teachers' Instructional Quality in Public Senior Schools in Mavoko Sub-County, Machakos County, Kenya

Roy Muthuri Kaburu[1], Prof. Peter Koros[2], and Sr. Dr. Theodorah Mabeya[3]
Corresponding author email address: roymuthuri18@gmail.com
[1] Master of Education Student Finalist in the Faculty of Education at the Catholic University of Eastern Africa
[2] Lecturer in the Faculty of Education at the Catholic University of Eastern Africa
[3] Lecturer in the Faculty of Education at the Catholic University of Eastern Africa

Abstract

The purpose of the study was to examine effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko sub-county, Machakos county, Kenya. The study focused on the following research question: How do in-service training programs affect teachers' instructional quality in public senior schools in Mavoko sub-county? The study was grounded in Human Capital Theory by Theodore Schultz. A mixed-methods approach under a convergent design was employed. The quantitative component adopted a cross-sectional design, while the qualitative component was guided by a phenomenology design. The target population comprised 16 public secondary schools, including 16 principals, 285 teachers, 2,850 Form Three and Four students, and one Sub-County Director of Education. Sampling techniques used included stratified sampling for schools, simple random sampling for teachers, systematic sampling for students, and criterion-purposive sampling for principals and SCDE sampling, resulting in a sample of 7 schools, 7 principals, 74 teachers, 285 students, and the Sub-County Director of Education. Data collection instruments included questionnaires for teachers, interview guides for principals and the Sub-County Director of Education, focus group discussion guides for students, a document analysis guide, and an observation guide. Quantitative data were analyzed using SPSS version 28, where descriptive statistics such as frequencies, percentages, means, and standard deviations were used. Inferential statistics, including t-tests and ANOVA, were used to determine differences between variables. Findings were presented using tables. Instrument validity was ensured through face, content, criterion, and construct validity, while reliability was tested using Cronbach's Alpha (0.8). Qualitative data were analyzed thematically using NVivo, guided by credibility, dependability, transferability, and confirmability, with ethical considerations observed. The study found that successful in-service training programs enhanced teachers' pedagogical skills, instructional strategies, assessment practices and classroom management. It implies that continuous professional development contributes significantly to the enhanced instructional quality of teachers. The study recommends that education stakeholders should strengthen regular needs-based training programs, provide adequate resources and establish monitoring mechanisms to ensure sustained improvement in teaching practices in public senior schools.

Key Words: Effectiveness; In-Service Training Programmes; Teachers' Instructional Quality; and Public Senior Schools

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Background to the Study

In-service training programs are structured professional development activities that aim to improve the knowledge, skills, competencies and instructional practices of practising teachers through workshops, seminars, mentoring, conferences and school-based learning activities (Hart, 2025; Sakani, 2024). Effectiveness refers to the extent to which such programs are successful in fulfilling their intended purpose of improving teachers' professional capacity and classroom performance. The quality of teaching by teachers is the ability of teachers to perform their professional duties effectively. This includes preparation of lesson, teaching of lesson, classroom management, assessment, engaging learners and implementation of the curriculum (Kiptoo et al., 2025). Therefore, effective in-service training should respond to teachers' contextual needs and facilitate continuous improvement in teaching practices (Mitchell et al., 2024).

Education stakeholders (ministries of education, teacher regulatory bodies, school administrators and teachers' professional organisations) acknowledge the importance of continuous teacher development to improve the quality of education. Stakeholders argue that teachers need continuous support to adapt to curriculum reforms, new pedagogical approaches, and changing learner needs. Research suggests that high-quality professional development programs improve teachers' pedagogical knowledge, confidence, flexibility, and ability to use effective instructional strategies (Mitchell et al., 2024; Sakani, 2024). However, stakeholders also point out that training programs vary in quality and sustainability, with short-term workshops often failing to make lasting changes in classrooms due to lack of follow-up support, limited resources and weak implementation mechanisms (IJRPR, 2025).

Internationally, education systems aiming at improved learning outcomes focus on improving the quality of instruction through teacher professional development. International evidence indicates that good teacher training programs are ongoing, collaborative, practice-oriented and connected to classroom realities. Research suggests that teachers get more out of professional learning models that incorporate mentoring, collaborative planning, reflective practice, and peer support, rather than isolated training sessions (OECD, 2020). However, international experience shows that the effectiveness of professional development depends on contextual factors such as the workload of teachers, institutional support, availability of resources and opportunities to use the gained knowledge. Thus, the effectiveness of in-service training programs needs to be evaluated in light of the specific educational environment in which teachers operate.

In established countries like Finland, teacher professional development is part of broader systems of continuous professional learning to improve the quality of teaching. OECD (2020) revealed that school-based professional development approaches, including collaborative lesson planning, mentoring and reflective teaching, enhanced teachers' ability to design engaging lessons, increase learner participation and implement formative assessment strategies. Nevertheless, there were also challenges in the Finnish experience, including a higher workload and less time for lesson preparation, which may have an impact on teachers' participation. The Finnish case suggests that professional development programs can improve the quality of

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

instruction when they are systematically planned, adequately supported, and relevant to the professional needs of teachers, rather than being implemented as isolated training activities.

Singapore also gives evidence on the impact of structured professional development programs on the quality of teaching. Darling-Hammond et al. (2020) reported that professional development activities related to career, mentorship, and professional learning communities resulted in improvements in teachers' lesson planning skills, classroom management approaches, and clarity of instructional delivery. Professional learning that was collaborative also supported consistency of teaching practices across departments. But the study found that compulsory participation linked to performance evaluation could reduce teachers' intrinsic motivation for professional development activities. The Singapore experience demonstrates that structured mentorship and lifelong learning may improve the quality of teaching. Successful implementation, however, requires a balance between institutional expectations and teachers' professional ownership and engagement.

In African countries professional development programs have increasingly been recognised as important ways of improving the quality of instruction. Spaull et al. (2021) examined professional learning communities and in-service training programs in secondary schools in South Africa and found that teachers who participated showed improvements in classroom management, lesson planning and subject delivery. These improvements led to better learner engagement. The study did, however, point to some challenges such as uneven distribution of resources and uneven implementation across provinces, which limited the effectiveness of some programs. The South African experience indicates that teacher training experiences must be supported by adequate resources, effective coordination and ongoing evaluation if they are to translate into measurable improvements in classroom instruction.

Asare and Nti (2022) did research on mentorship and collaborative professional development activities among secondary school teachers in Ghana. The findings showed that teachers participating in mentorship programs improved their instruction quality by using learner-centred teaching methods, establishing more explicit learning goals and more effective lesson planning. However, the programme's effectiveness was hampered by such barriers as demanding teaching schedules, limited time for professional learning, and a lack of adequate formal mentorship structures. The Ghanaian experience indicates that while professional development can improve teachers' instructional practices, its effectiveness depends on continuous institutional support, timeliness, and the establishment of systemic processes that promote continuous teacher learning and collaboration.

In Kenya, research has shown that professional development programs have the potential to lead to increased quality of instruction, but implementation and sustainability challenges remain. Oduor and Simatwa (2020) in Nairobi County found that teachers' participation in workshops and in-service training improved classroom organization, lesson planning and learner-centred instructional approaches. Unfortunately, lack of funding, limited follow-up support and scheduling difficulties limited the application of the acquired knowledge in classrooms. Again, Kiprono and Too (2022) found that collaborative professional development activities in Kiambu County such as peer mentorship and subject conversations improved teachers' capacity to involve

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

learners and explain difficult concepts. But the teachers' participation in continuous professional learning was impacted by the heavy workloads and limited time.

The Kenyan case further emphasises the value of examining professional development in specific county contexts. Ngware et al. (2021) investigated professional development programs supporting the implementation of competency-based education in public secondary schools in Machakos County. The study found that workshops, mentorship and professional learning communities improved lesson design, assessment practices and the alignment of teaching objectives and instructional activities. But the study found that many programs were little more than short-term workshops with little follow-up support, limiting their long-term impact on the quality of instruction. These findings imply that the effect of teacher training programs is dependent not only on their existence but also on the presence of continuity, enough support and chances for teachers to use newly acquired teaching skills.

Mwangi and Kinyua (2022) investigated the effect of teachers' participation in professional development programs on instructional quality in public secondary schools in Mavoko Sub-County. The study revealed that involvement in peer collaboration, mentoring and school-based training resulted in better classroom management, learner engagement and clarity of instruction. However, contextual challenges such as rapid urbanisation, increasing enrolment, large class sizes and heavy workloads of teachers constrained teachers' participation in professional development activities. These findings suggest the need to investigate the effectiveness of in-service training programs in Mavoko Sub-County where contextual factors may influence the translation of training into better instructional practices.

Despite the evidence of teacher professional development, there are still knowledge gaps on the effectiveness of in-service training programs on instructional quality in public senior schools in Mavoko Sub-County. Previous studies have mostly analysed general professional development initiatives with no specific interest in elements of in-service training such as workshops, seminars, mentorship, challenges faced by teachers in participating and strategies for improving program effectiveness. Furthermore, the results from developed countries may not necessarily apply to the Kenyan context due to variation in resources, institutional structures as well as educational challenges. This study, therefore, attempts to fill this gap by examining the impact of in-service training programs on the instructional quality of teachers in public senior schools in Mavoko Sub-County, Machakos County, Kenya.

Statement of the Problem

It has been demonstrated that professional development (PD) enhances teachers' instructional quality globally. Collaborative professional development in Finland enhanced student engagement and formative evaluation (OECD, 2020). Mentorship-linked professional development improved classroom organization and instructional clarity in Singapore (Darling-Hammond et al., 2020). Research from Ghana and South Africa shows that structured professional development, mentorship, and collaborative learning strengthen lesson preparation and classroom management. However, the effectiveness of these strategies is limited by heavy workloads and varying program quality (Spaull et al., 2021; Asare & Nti, 2022). The Ministry of Education in

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Kenya encourages professional development, but its effectiveness on teaching methods is diminished by unequal access and insufficient follow-up (Ngware et al., 2021; Kiprono & Too, 2022).

Public senior schools in Mavoko sub-county encounter particular challenges that limit the effectiveness of professional development. Large class sizes, high student enrollment, and rapid population growth raise teacher workloads and restrict the application of learned skills (Mwangi & Kinyua, 2022). There are still gaps between policy expectations and classroom realities, despite the Ministry of Education's continued provision of in-service training and school-based professional learning. Parents and education officers have noted ongoing instructional deficiencies (MoE, 2021). This implies that although professional development programs are in place, it is unclear how they actually affect the quality of instruction provided by teachers in Mavoko sub-county. Therefore, the current study examined the effectiveness of teachers' professional development programs on their instructional quality in public senior schools in Mavoko sub-county, Machakos County, Kenya.

Research Question

How do in-service training programs affect teachers' instructional quality in public senior schools in Mavoko sub-county?

Theoretical Framework

The study is based on the Human Capital Theory developed by Theodore Schultz (1961) and Gary Becker (1993). This theory considers education, training and skill development as investments which increase the knowledge, competencies and productivity of individuals. Schultz (1961) stated that human abilities acquired through education and training represent valuable capital that enhances performance and economic development. It was further elaborated by Becker (1993) that workplace training allows individuals to develop specific skills that improve efficiency and productivity. Regarding education, in-service training programs are investments in the professional capacity of teachers by improving their pedagogical knowledge, instructional skills, assessment practices and classroom management abilities. This study adopted Human Capital Theory as a framework to study the effectiveness of in-service training programs on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya.

The strength of Human Capital Theory is in explaining how investing in professional development increases individual capabilities and enhances organisational performance. The theory perceives teachers as worthy human resources whose knowledge, skills and competencies can be enhanced through continuous training. Darling-Hammond et al. (2020) found that well-designed professional development programs enhance teachers' pedagogical knowledge, instructional strategies, classroom management and ability to respond to changing educational demands. The theory also supports the view that sustained investment in teacher learning improves teachers' effectiveness and professional competence, resulting in improved educational outcomes (Hanushek & Woessmann, 2021). In this study, in-service training programs like workshops,

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

seminars, mentorship and collaborative learning provide opportunities for teachers to develop competencies needed to improve instructional quality.

While Human Capital Theory has helped in understanding professional development and performance improvement, it does have some weaknesses. One of the major disadvantages of this approach is its focus on individual skills and productivity, to the neglect of institutional, social and environmental influences on the application of acquired skills. Teachers may receive in-service training, but the translation of training into improved instructional practices could be affected by factors such as inadequate teaching resources, heavy workloads, limited administrative support, and school organisational culture (Boon & van der Klink, 2021). In addition, the theory assumes that investment in training naturally produces more productivity, but the productivity benefits from professional development depend on the relevance, quality and sustainability of the programs offered (Avalos & Flores, 2020). Thus, systems of teacher support and contextual conditions remain salient considerations in the theory's application.

This study was based on Human Capital Theory that provided a basis for understanding the way investment in in-service training programs could enhance teachers' instructional quality in public senior schools. The study was guided by the theory in examining how professional development activities such as workshops, seminars, mentorship and school-based training contribute to improving lesson preparation, instructional delivery, classroom management, learner engagement and assessment practices. Public senior schools teachers in Mavoko Sub-County need to be continuously trained to respond well to changes in the curriculum, new teaching approaches and the different needs of the learners. This study based on Human Capital Theory explored the question whether investment in teachers' professional abilities via in-service training programs resulted in better quality of instruction. Thus, the theory is consistent with the goal of enhancing teacher capacity as a means of raising educational efficiency and student results (OECD, 2020).

Review of Related Empirical Literature

With an emphasis on formative assessment procedures in Italian schools, Parmigiani (2025) examined the effects of in-service teacher training on instructional quality. Purposive sampling was used to pick 120 teachers for the study, which used a quasi-experimental approach. Pre- and post-tests, observation checklists, and teacher self-assessment instruments were used to gather data. Internal consistency metrics were used to determine reliability, and expert validation and pilot testing were used to guarantee validity. Thematic analysis and paired sample t-tests were used to examine the data. The results showed that teachers' instructional tactics, feedback systems, and student engagement were all greatly enhanced by in-service training. The study suggested integrating ongoing assessment training into teacher education programs and expanding structured professional development.

The current study employed a representative sample selected using suitable sampling approaches to improve external validity; the previous study's quasi-experimental design using purposeful sampling limited generalizability. Furthermore, the previous study examined only teachers, leaving out other important stakeholders. For a more comprehensive view, the present study also included principals, teachers, students, and Sub-County Directors of Education (SCDE).

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

The current study addressed contextual and cultural disparities by concentrating on public senior schools in Mavoko sub-county. The previous study was carried out in a developed European context, which differs institutionally and culturally.

A study by Talafian et al. (2023) examined responsive professional development in Physics teaching communities in the USA. According to the researchers, it was difficult to create learning environments that could meet teachers' different demands since responsive features were not well defined or identified. This study used a phenomenological approach to identify components of responsive teacher professional development (PD). Through surveys and interviews with 13 high school physics instructors participating in a professional development program at a university in the Midwest, the researchers identified responsive elements such as accessibility, adaptability, and practicality that are essential to implementing responsive PD. Opportunities for professional development, pedagogical support, and community engagement were additional characteristics that complemented the advantages of participation in a Community of Practice model used in this work.

The previous research on professional growth emphasizes aspects like adaptability, accessibility, and teamwork, but it also identifies important gaps. A firm empirical connection between in-service training programs and teachers' instructional quality is rarely established, and the study is based on small, subject-specific samples in developed countries. Furthermore, nothing is known about the contextual reality of Mavoko sub-county's public senior schools. By examining a larger teacher population and using both quantitative and qualitative methods to determine how in-service training programs affect instructional quality within the local educational context, the current study filled these gaps.

Dulo (2022) investigated how in-service training affected Ethiopian secondary school teachers' quality of instruction. The purpose of the study was to ascertain how ongoing professional development improves instructional strategies and classroom efficacy. Using a sample of 210 teachers chosen by stratified random sampling, a quantitative descriptive survey approach was used. Structured questionnaires were used to gather data, and expert review was used to enensure validity, and Cronbach's alpha ($\alpha = 0.82$) was used to assess reliability. Descriptive and inferential statistics were used to analyze the data. The results showed that in-service training greatly enhanced lesson planning, evaluation techniques, and classroom management. However, the long-term impact was diminished by inadequate follow-up support. To sustain gains in teaching quality, the study suggested strengthening formal training programs and ongoing monitoring.

The previous study used a strictly quantitative methodology, which limited a deeper understanding of teachers' lived experiences. The current study used a mixed-methods convergent design to incorporate both numerical trends and qualitative insights. Furthermore, the previous study used only questionnaires, which might have limited the richness of the data. To improve triangulation and validity, the current study employed a variety of instruments, including questionnaires, interviews, focus groups, observation, and document analysis. Additionally, the Ethiopian context is different from Mavoko in terms of geography and socioeconomic status; the findings of this study applied to Kenyan public senior schools.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Sengabo et al. (2025) investigated how in-service training affected Rwandan instructors' use of pedagogical techniques and students' learning outcomes. In order to evaluate how participation in training programs affected instructional practices, the study used a mixed-methods approach that included surveys and classroom observations. The findings showed that in-service training and teaching effectiveness were strongly positively correlated, with trained teachers exhibiting better lesson preparation, learner-centered approaches, and integration of suitable teaching aids. Students instructed by qualified instructors also demonstrated higher levels of engagement and better academic achievement. The study came to the conclusion that improving learning outcomes and enhancing instructional quality depend heavily on ongoing professional development. It suggested consistent funding for organized in-service training programs to improve teachers' pedagogical skills and the standard of education as a whole.

Sengabo et al. (2025) found a significant positive correlation between teaching efficacy and in-service training, however there are still a number of gaps. Without specifically looking at more general aspects of instructional quality, the study concentrated on pedagogical tools and learning objectives. Furthermore, its findings are limited in their relevance to public senior schools in Kenya because they are context-specific to Rwanda. Additionally, it provides scant information about the contextual experiences of teachers with in-service programs. By concentrating on instructional quality as a multidimensional result, looking at teachers in Mavoko sub-county, and employing both quantitative and qualitative approaches to capture context-specific factors, the current study closed these gaps.

Using a descriptive survey methodology, Ombati, Njeru, and Muthoni (2022) examined how teaching practices in Kenyan schools were affected by continuous professional development (CPD). To ascertain the connection between CPD participation and classroom practices, information was gathered from instructors via questionnaires and examined. According to the study, CPD significantly improves instructional quality by giving teachers greater pedagogical abilities, more organized lessons, and successful learner engagement techniques. Teachers who participated in CPD programs on a regular basis showed a greater usage of interactive teaching techniques and learner-centered approaches. The study recommended establishing CPD frameworks to enable ongoing teacher development and better learning outcomes, concluding that persistent professional development is crucial for increasing both teaching effectiveness and student participation.

Although the study establishes the significance of CPD, it takes a broad approach, neglecting to identify particular elements like in-service training programs and their unique contribution to the quality of education. Furthermore, the study did not sufficiently examine how regional contextual factors affect CPD effectiveness. This restricts the breadth of knowledge about how particular professional development techniques affect instruction in regional contexts. By concentrating on in-service training programs as an essential part of professional growth, the current study filled in these gaps. It also looked at how they directly affect the quality of education in Mavoko's public senior schools. The study offered more in-depth, context-specific insights on how in-service training influences instructional practices by utilizing both quantitative and qualitative methodologies.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Otieno and Wekesa (2021) used a mixed-methods approach to investigate how teacher pedagogy in Kenya was affected by competency-based curriculum (CBC) training. In order to evaluate how in-service training affected instructors' instructional strategies, the study gathered data using surveys, interviews, and classroom observations. The results showed that CBC training greatly enhanced instructors' pedagogical competency, especially in the use of interactive classroom delivery, formative assessment techniques, and learner-centered teaching methods. Instructors who received training showed greater confidence in implementing CBC requirements and encouraging engaged student involvement. The study concluded that improving teaching effectiveness and promoting curriculum improvements depend heavily on in-service training. It suggested ongoing capacity building to ensure educators are prepared to provide high-quality instruction within the competency framework.

The study emphasizes the benefits of CBC training for pedagogy; however it mostly concentrates on curriculum implementation rather than more general aspects of instructional quality. Additionally, it doesn't fully evaluate how in-service training affects various facets of teaching outside of CBC-related competencies. Additionally, certain school contexts receive little attention, which could restrict the findings' generalizability to other areas. By looking at in-service training programs outside of the CBC setting and concentrating on their effectiveness on instructional quality, the current study closed these gaps. The studyproduced both statistical evidence and insights into how training programs influence instructional practices through a mixed-methods approach.

Research Design and Methodology

The study used a convergent mixed methods research design to explore the effectiveness of in-service training programs on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. Research design provides a systematic structure to guide the researcher to collect, analyse and interpret data to effectively answer research questions (Creswell & Creswell, 2023). The convergent mixed methods design enables the researcher to gather both quantitative and qualitative data simultaneously, analyse each data set individually, and integrate the results during the interpretation stage. The quantitative phase investigated the relationship between in-service training programs and teachers' instructional quality, while the qualitative phase explored the experiences of teachers, principals and education administrators on the implementation and effectiveness of professional development initiatives. This design was therefore used as it provided for triangulation and a thorough comprehension of how in-service training influences teachers' instructional practices in public senior schools in Mavoko Sub-County.

The strength of the convergent mixed methods design is that it can combine numerical evidence with detailed explanations of the participants' experiences to provide a broader understanding of the research problem. The design increases the validity of findings as it enables the comparison and corroboration of quantitative findings on teachers' instructional quality with qualitative information from teachers, principals, and education officers (Creswell & Plano, 2022). The quantitative approach provides evidence on the availability and effectiveness of in-service training programs that can be measured whereas the qualitative approaches elaborate on contextual

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

issues, such as implementation challenges, administrative support, and teachers' experiences. Tashakkori et al. (2021) suggest that mixed methods research is appropriate for a study that needs both statistical patterns and contextual explanations. The design of this study improved understanding of how workshops, seminars, mentorship programs and other professional development activities contribute to improved instructional practices among teachers.

While the convergent mixed methods design has made important contributions to educational research, it does have limitations. One of the major challenges is that the collection, analysis and integration of both quantitative and qualitative data requires more time, resources and methodological expertise than the use of a single research approach. Researchers should be cautious in systematically collecting the two datasets and interpreting differences or contradictions between the findings. Moreover, the use of different sampling procedures, instruments and analytical techniques may also contribute to the complexity of the research process. Mixed methods studies must be designed carefully so that the integration of findings leads to meaningful conclusions, not disconnected results (Creswell & Creswell, 2023). Thus, for successful application of the design effective coordination, proper methodological decisions and sufficient researcher competence are necessary.

The convergent mixed methods research design was relevant for this study as it provided a suitable framework for the examination of the effectiveness of in-service training programs on the instructional quality of teachers in public senior schools in Mavoko Sub-County. The study needed to collect quantifiable information on teachers' involvement in professional development programs and their teaching practices and to get deeper explanations on teachers' experiences, challenges and perceptions of training effectiveness. The study used questionnaires, interviews, focus group discussion, observation and document analysis to obtain evidence from various perspectives to improve interpretation of findings. This design was quite suitable because Mavoko Sub-County has diverse educational contexts influenced by rapid urbanisation, socioeconomic differences, increasing demand for quality education and varying professional development needs among teachers (County Government of Machakos, 2023). Thus, the convergent mixed methods design facilitated the researcher to collect comprehensive evidence on the extent to which in-service training programs contribute to the improvement of the instructional quality of teachers in public senior schools.

Presentation, Interpretation, and Discussion of Findings

The first study question aimed to ascertain the effectiveness of in-service training programmes on the quality of instruction provided by teachers in Mavoko sub-county's public senior schools. Using a five-point Likert scale (5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, and 1 = Strongly Disagree), teachers were asked to rate their agreement with the statements regarding the effectiveness of in-service training programmes on instructional quality. Table 1 presents the findings.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Table 1
Responses In-Service Training Programmes and Teachers' Instructional delivery (n=64)

Statement	SA	A	U	D	SD	Mean	SD
In-service training programmes have improved my lesson planning skills.	12 (18.8%)	25 (39.1%)	6 (9.4%)	11 (17.2%)	10 (15.6%)	3.28	1.37
In-service training has enhanced my subject content mastery.	13 (20.3%)	23 (35.9%)	8 (12.5%)	12 (18.8%)	8 (12.5%)	3.33	1.33
I apply new teaching strategies learned from in-service training.	10 (15.6%)	28 (43.8%)	7 (10.9%)	11 (17.2%)	8 (12.5%)	3.33	1.29
In-service training has improved my assessment techniques.	15 (23.4%)	22 (34.4%)	9 (14.1%)	10 (15.6%)	8 (12.5%)	3.41	1.34
In-service training has enhanced my classroom management skills.	16 (25.0%)	23 (35.9%)	10 (15.6%)	9 (14.1%)	6 (9.4%)	3.53	1.27
I integrate learner-centered approaches learned from training into my teaching.	14 (21.9%)	22 (34.4%)	9 (14.1%)	11 (17.2%)	8 (12.5%)	3.36	1.34
In-service training has improved my ability to address diverse learner needs.	16 (25.0%)	24 (37.5%)	7 (10.9%)	10 (15.6%)	7 (10.9%)	3.50	1.32
I feel more confident in my teaching after attending in-service training.	11 (17.2%)	26 (40.6%)	10 (15.6%)	9 (14.1%)	8 (12.5%)	3.36	1.28
In-service training has improved my use of instructional materials.	13 (20.3%)	25 (39.1%)	11 (17.2%)	8 (12.5%)	7 (10.9%)	3.45	1.26
Overall, in-service training has enhanced my instructional quality.	13 (20.3%)	26 (40.6%)	10 (15.6%)	7 (10.9%)	8 (12.5%)	3.45	1.28

Source: *Researcher (2026)*

Lesson planning abilities among teachers have been positively influenced by in-service training programs, according to Table 1's data. In all, 37 (57.8%) teachers agreed (25; 39.1%) or strongly agreed 12 (18.8%) that in-service training had enhanced their ability to design lessons. Nonetheless, 21 (32.8%) teachers, including 11 (17.2%) who disagreed and 10 (15.6%) who strongly disagreed, thought that the training had not significantly benefited their lesson planning, while 6 (9.4%) teachers remained neutral. Some teachers may have attended few training sessions, received insufficient follow-up support, or felt that the training was not properly connected with their classroom realities, as indicated by the neutral and negative responses. The Human Capital Theory (Schultz, 1961), which contends that investing in professional development improves employees' knowledge, competences, and productivity, was supported by these findings. The findings also support the findings of Dulo (2022), who found that while poor follow-up support restricted long-term efficacy, in-service training considerably enhanced teachers' lesson preparation skills.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

The findings also demonstrate that teachers' subject knowledge understanding was improved by in-service training. In particular, 36 (56.3%) respondents agreed with this statement, including 23 (35.9%) who agreed and 13 (20.3%) who strongly agreed. However, 20 (31.3%) teachers 12 (18.8%) disagreeing and 8 (12.5%) strongly disagreeing; expressed opposing views, while 8 (12.5%) teachers stayed neutral. While disagreement could be explained by differences in training quality or teachers' pre-existing competence, neutral responses might indicate that some teachers felt little gain because the training focused more on pedagogy than subject specialization. The findings show that professional development improves teachers' instructional expertise, which raises educational quality in accordance with Human Capital Theory. These findings corroborate with those of Sengabo et al. (2025), who revealed that trained teachers showed greater pedagogical ability and lesson planning, which improved instructional quality and learner achievement.

On the third statement, the findings show that 38 (59.4%) respondents either agreed (28; 43.8%) or strongly agreed (10; 15.6%) that they used new teaching techniques that they learned during in-service training. On the other hand, 19 (29.7%), including 11 (17.2%) who disagreed and 8 (12.5%) who strongly disagreed, said that they had not successfully applied the recently learned techniques, while 7 (10.9%) teachers were neutral. While disagreement may arise from a lack of instructional resources, a busy workload, or resistance to altering long-standing teaching habits, neutral responses may indicate insufficient opportunity to practice the strategies. The findings are in line with the Human Capital Theory, which holds that funding professional development gives teachers useful skills that enhance their effectiveness at work. Additionally, they agree with Ombati, Njeru, and Muthoni (2022), who found that teachers' adoption of learner-centered and interactive teaching approaches grew dramatically as a result of ongoing professional development.

The findings also show that teachers' assessment methods were positively affected by in-service training. Improvements in assessment procedures were acknowledged by 37 (57.8%) respondents, of whom 15 (23.4%) strongly agreed and 22 (34.4%) agreed. While 18 (28.1%) respondents, including 10 (15.6%) who disagreed and 8 (12.5%) who strongly disagreed, did not see any appreciable progress, 9 (14.1%) respondents remained indifferent. Teachers who disagreed might not have received enough mentorship following the training, while those who stayed neutral would not have had enough opportunities to use formative assessment techniques. The Human Capital Theory, which stresses ongoing investment in professional competencies for increased output, is consistent with these findings. The findings also corroborate Parmigiani's (2025) research, which found that in-service training greatly enhanced teachers' formative evaluation procedures, feedback systems, and overall quality of instruction.

In-service training enhanced classroom management abilities as Table 1's findings. In particular, 39 (60.9%) respondents confirmed that the training improved their classroom management skills, with 16 (25.0%) strongly agreeing and 23 (35.9%) agreeing. On the other hand, 15 (23.4%) teachers held opposing opinions, with 10 (15.6%) remaining neutral and 9 (14.1%) disagreeing and 6 (9.4%) strongly disagreeing. Teachers who work in packed classrooms where effective classroom management is still challenging after training may be the source of neutral responses. Similarly, debate might point to inadequate real-world examples or uncontrollable

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

contextual issues. The Human Capital Theory, which contends that professional investment increases workers' efficacy and efficiency, is supported by these findings. They are also in line with Dulo (2022), who found that despite sustainability issues, in-service training greatly improved teachers' classroom management techniques.

The findings show that learner-centered teaching strategies learned during training were extensively used. Indeed, 36 teachers (56.3%) agreed with this statement, with 22 teachers (34.4%) and 14 teachers (21.9%) strongly agreeing. However, 19 (29.7%), comprising 11 (17.2%) who disagreed and 8 (12.5%) who strongly disagreed, did not see significant improvements, while 9 (14.1%) teachers remained indifferent. While disagreement may be caused by insufficient teaching resources, big class sizes, or curricular limitations, neutral responses may show uncertainty about completely integrating learner-centred techniques. The Human Capital Theory, which contends that professional growth increases the knowledge and abilities required for efficient job performance, is still supported by these data. The findings substantiate those of Otieno and Wekesa (2021), who revealed that competency-based curriculum training greatly improved teachers' pedagogical competence and learner-centered instructional practices.

Table 1 show that in-service training enhanced teachers' capacity to meet the requirements of a variety of learners. Overall, 40 (62.5%) respondents had favorable opinions, with 16 (25.0%) strongly agreeing and 24 (37.5%) agreeing. However, 17 (26.6%) respondents, including 10 (15.6%) who disagreed and 7 (10.9%) who strongly disagreed, believed that the training had not sufficiently improved inclusive instructional practices, while 7 (10.9%) respondents were neutral. While disagreement can point to a lack of specialized training in inclusive education, neutral response might imply that some teachers did not have enough experience with diverse classes. These findings corroborate the Social Learning Theory, which suggests that during professional development programs, teachers enhance their professional practice through contact, collaboration, modelling, and observation. In a similar vein, Talafian et al. (2023) discovered that teachers' pedagogical support, teamwork, and adaptability were improved by responsive professional development, allowing them to meet the diverse educational requirements of their students.

The study also found that attending in-service training increased teachers' self-confidence. Increased teaching confidence was reported by 37 (57.8%) respondents, including 26 (40.6%) who agreed and 11 (17.2%) who strongly agreed. On the other hand, 17 (26.6%), which included 9 (14.1%) who disagreed and 8 (12.5%) who strongly disagreed, did not feel more confident, while 10 (15.6%) respondents remained neutral. Teachers who maintained their neutrality might have needed more coaching before becoming confident, whereas disagreement might be the result of insufficient training time or disparities in prior teaching experience. These findings align the Social Learning Theory, which states that teachers gain confidence from observing effective methods, interacting with peers, and getting helpful criticism. The findings are also in line with Talafian et al. (2023), who highlighted how collaborative learning and ongoing pedagogical assistance enhanced instructors' confidence through responsive professional development.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

It also emerged that teachers' utilization of instructional materials was enhanced by in-service training. In particular, 38 (59.4%) respondents acknowledged improvement, with 13 (20.3%) strongly agreeing and 25 (39.1%) agreeing. However, 15 (23.4%) respondents, including 8 (12.5%) who disagreed and 7 (10.9%) who strongly disagreed, expressed opposing views, while 11 (17.2%) respondents stayed neutral. While disagreement can point to a lack of institutional support for obtaining instructional materials, neutral responses might imply that teachers lacked sufficient teaching resources despite getting training. The Adult Learning Theory (Andragogy), which contends that adults learn best when professional learning is appropriate, relevant, and instantly applicable to their work situations, is supported by these findings. Similarly, Sengabo et al. (2025) found that skilled educators successfully incorporated teaching aids and instructional resources, improving student engagement and instructional efficacy.

Finally, the results indicate that in-service training was widely seen by teachers as improving the quality of education. Generally, 39 (60.9%) teachers agreed, with 13 (20.3%) strongly agreeing and 26 (40.6%) agreeing. However, 15 (23.4%) teachers held opposing opinions, with 7 (10.9%) disagreeing and 8 (12.5%) strongly disagreeing, while 10 (15.6%) teachers stayed neutral. While disagreement may represent contextual limitations like insufficient teaching materials or little administrative support, neutral replies may indicate teachers who had recently attended training and had not yet noticed significant changes. The Adult Learning Theory, which highlights that adults value learning opportunities that directly enhance professional performance, is supported by these data. The results also support the findings of Ombati et al. (2022) and Otieno and Wekesa (2021), who found that successful classroom practices and instructional quality are greatly enhanced by ongoing professional development.

Lesson planning, subject mastery, teaching strategies, assessment, classroom management, learner-centered instruction, inclusive education, confidence, use of instructional materials, and overall teaching effectiveness were all perceived by teachers as being positively influenced by in-service training programs, as Table 1 shows. The combined percentages of teachers who strongly agreed and agreed consistently exceeded half of the respondents for all assertions, ranging from 36 (56.3%) to 40 (62.5%), demonstrating widespread recognition of the importance of professional development. However, disagreement levels ranging from 15 (23.4%) to 21 (32.8%) and neutral responses ranging from 6 (9.4%) to 11 (17.2%) indicate that training objectives were not consistently experienced. These reservations could be explained by variations in training quality, duration, follow-up assistance, school resources, and contextual implementation issues. The findings significantly support the theories of Human Capital Theory, Social Learning Theory, and Adult Learning Theory by demonstrating that persistent investment in teacher professional development improves instructional quality.

The findings of the questionnaire shown in Table 1 were mainly validated by the observation guide findings. According to observations made in the classroom, the majority of teachers who had taken part in in-service training showed enhanced instructional practices, including well-planned lesson delivery, efficient classroom management, learner-centered teaching strategies, and a greater use of questioning techniques to engage students. Through group discussions, demonstrations, and cooperative activities, several teachers were seen promoting

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

student participation, demonstrating the real-world application of skills learned during professional development. Nonetheless, a small number of teachers continued to primarily employ teacher-centered teaching strategies, with little student engagement and little utilization of teaching resources. These differences imply that while in-service training had a positive effect on the quality of instruction for many teachers, the degree to which newly acquired competencies were applied in the classroom was influenced by variations in training exposure, teaching experience, resource availability, and follow-up support.

The findings in Table 1 were further supported by document analysis. Teachers who regularly attended in-service training developed detailed lesson plans, matched curriculum requirements with instructional objectives, included learner-centered activities, and kept more organized assessment records than those who participated infrequently, according to an analysis of professional development attendance registers, lesson plans, schemes of work, lesson observation reports, and records of continuous assessment. Additionally, when teachers participated in professional development programs, school records demonstrated stronger documenting of students' progress and a greater use of formative assessment. However, some documents showed inconsistent use of recently learned teaching techniques, especially in schools with little instructional resources and follow-up supervision. The documentary evidence supported the survey's conclusions that in-service training improves instructors' teaching quality while emphasizing the necessity of ongoing observation, institutional support, and frequent refresher training to maintain these gains.

The principals clarified that in-service training programs had typically raised the caliber of education provided by teachers in all of their schools. They found that teachers who participated in professional development events on a regular basis had better lesson planning, more self-assurance in their ability to teach, better classroom management, and more use of learner-centered teaching techniques. One of the principals (P2) also observed that "teachers with training were more inclined to use instructional materials successfully in the classroom, use competency-based instructional approaches, and apply continuous assessment procedures." However, they another principal (P4) also pointed out that "not all teachers profited equally from the training because some programs were too brief, had insufficient follow-up, or were attended by a small number of teachers who were supposed to pass along the knowledge to their peers." They stressed that the successful application of certain of the abilities learned during training was also hampered by insufficient instructional resources and excessive workloads. One of the principals observed,

> Teachers who regularly attend in-service training prepare better lessons, involve learners more actively, and manage their classrooms more effectively than those who rarely participate. However, if the training is to result in long-lasting gains in instructional quality, sufficient teaching resources and frequent follow-up are required (Principal 4, personal communication, June 18, 2026).

The majority of teachers agreed that in-service training improved lesson planning, learner-centered instruction, classroom management, assessment procedures, and overall instructional quality. This response validates the data shown in Table 1.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

According to the SCDE, one of the best methods for raising the professional competence and quality of instruction of teachers in the sub-county is still in-service training. The officer observed that "classroom practices, curriculum implementation, learner engagement, and teacher confidence were generally better in schools where teachers regularly took part in professional development programs offered by the Ministry of Education and Teachers Service Commission." However, the SCDE acknowledged that "certain schools had difficulties, such as insufficient funding, sporadic training opportunities, a lack of teaching resources, and insufficient post-training monitoring, which decreased the consistency with which newly learned material was applied in the classroom." The officer emphasized that in order to optimize the advantages of professional development, ongoing oversight and frequent refresher courses were required. According to the SCDE,

> Professional development strengthens instructional quality and equips teachers with current pedagogical knowledge, but the impact is greater where schools provide adequate teaching resources, ongoing support, and effective supervision after training" (SCDE, personal communication, June 20, 2026).

The findings in Table 1 are corroborated by this assertion. It demonstrates that when schools establish favorable conditions for the application of new abilities, in-service training enhances teachers' instructional methods. Most educators concurred that training improved learner-centered teaching, evaluation, lesson preparation, and classroom management. The SCDE did, however, also provide an explanation for certain teachers' neutrality or disagreement. The officer claimed that some teachers were unable to completely apply what they had learned due to a lack of administrative support, poor training follow-up, and inadequate teaching tools. Therefore, maintaining gains in instructional quality requires ongoing oversight and institutional support.

There were discernible disparities between teachers who had attended in-service training and those who had not, according to students who took part in the focus group discussions. They clarified that teachers with training were better organized during class, promoted student involvement, employed a greater range of instructional strategies, gave concise explanations, and promptly supplied assignment feedback. In some of the groups FGD 3, 18, & 23), students reported that "these teachers fostered more engaging classrooms where students felt free to participate in conversations and ask questions." Despite having attended training, some students noticed that (FGD 12, 19, 21, & 25), "some teachers still relied on lecture techniques, seldom used teaching materials, and offered little opportunities for student interaction." They ascribed these variations to the dedication of individual teachers, the accessibility of instructional materials, and differing degrees of expertise. One student in focus group noted,

> Our teachers who attend training involve us more during lessons, use examples that make learning easier, and give feedback on our work more quickly,". While some educators continue to teach in the traditional manner, the majority of those who participate in training make their classes more engaging. Instructors with training encouraged students to collaborate, ask questions, and take part in class

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

> discussions. These instructional strategies enhanced students' understanding of the material and made lessons more interesting. Some instructors continued to use lecturing techniques and offered few chances for student involvement (Student Participant 6, focus group discussion, June 22, 2026).

These statements demonstrate that in-service training has a beneficial effect on instructional quality, which supports the findings in Table 1. It implies that skilled teachers are more engaged, give more precise explanations, and provide prompt feedback that improves learning. However, other responses in Table 1 remained neutral or disagreed regarding the advantages of in-service training, which can also be explained by the student's observation that some teachers continue to employ old teaching methods.

In-service training programs have a beneficial influence on teachers' instructional quality, according to both quantitative and qualitative data. Lesson planning, subject mastery, classroom management, learner-centered teaching, assessment practices, and overall instructional quality were all improved by in-service training, according to quantitative findings from Table 1. The majority of teachers agreed with all the statements, with positive responses ranging from 36 (56.3%) to 40 (62.5%). Additionally, largely positive perceptions were mirrored in the matching mean scores. Principals, the SCDE, and students reported observable changes in teachers' classroom practices, confidence, learner engagement, and lesson delivery, which supported these findings. However, they also pointed out that some teachers' training was less effective due to a lack of resources, insufficient follow-up support, and uneven implementation, which explains the small percentage of neutral and negative comments.

Conclusions

The study established that in-service training programs play a critical role in improving the instructional quality of teachers in public senior schools. Professional development activities such as workshops, seminars, mentorship, and collaborative learning lead to better lesson preparation, instructional delivery, classroom management, assessment practices, and learner engagement. But the effectiveness of these programs depends on their relevance, consistency, availability of resources and institutional support given to teachers. The study also concludes that occasional and poorly supported training activities may not be effective in changing classroom practices. So it is important to improve the structured and context specific in-service training programs to improve teachers' professional competencies and quality of education in Mavoko Sub-County.

Recommendations

The study recommends that the Ministry of Education, Teachers Service Commission and school administrators should strengthen continuous and needs based in-service training programs to address teachers' instructional challenges and emerging curriculum demands. Schools should offer sufficient support in terms of mentorship, peer collaboration, teaching materials and opportunities to apply acquired skills in the classroom. It is also important to regularly monitor and evaluate training programs to determine their effectiveness and to ensure they are relevant to the professional needs of teachers. Furthermore, the education stakeholders should take into consideration the contextual factors such as workload, availability of resources, and school

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

environments when creating professional development initiatives. The measures aim to ensure the sustainability of the in-service training program and encourage better quality of instruction among teachers in public senior schools.

References

Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd ed.). University of Chicago Press.

Boon, J., & van der Klink, M. (2021). Human capital development and work performance: A critical review. *Human Resource Development Review, 20*(1), 5–29.

Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.

Creswell, J. W., & Plano Clark, V. L. (2022). *Designing and conducting mixed methods research* (4th ed.). SAGE.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2022). *Effective teacher professional development* (2nd ed.). Learning Policy Institute.

Dulo, A. A. (2022). In-service teachers' professional development and instructional quality in secondary schools in Gedeo Zone, Ethiopia. *International Journal of Educational Research, 11*(2), 45–58.

Hanushek, E. A., & Woessmann, L. (2021). *Education, knowledge capital, and economic growth*. Cambridge University Press.

Hart, L. A. (2025). Teachers' professional development programmes for effective instructional service delivery in public senior secondary schools. *Journal of Business and African Economy, 11*(3), 39–53.

Kiprono, F. J., & Too, J. K. (2022). Teacher professional development and instructional practices in Kenyan secondary schools. *International Journal of Educational Research, 114*, 101993. https://doi.org/10.1016/j.ijer.2022.101993

Kiptoo, D., Omachar, B. S., & Kegode, G. (2025). Strategies for enhancing teacher productivity among public secondary schools in Kesses and Baringo North Sub-Counties. *Open Journal of Social Sciences, 13*(11), 757–770.

Ngware, M. W., Abuya, B. A., Mutisya, M., & Oketch, M. (2021). Teacher professional development and instructional quality in urban secondary schools. *Teaching and Teacher Education, 103*, 103357. https://doi.org/10.1016/j.tate.2021.103357

Oduor, A. J., & Simatwa, E. M. W. (2020). Influence of in-service training on teachers' instructional effectiveness. *International Journal of Educational Administration and Policy Studies, 12*(1), 1–9.

OECD. (2021). *Teachers at the centre of education recovery*. OECD Publishing.

Ombati, C., Njeru, L., & Muthoni, F. (2022). Continuous professional development and instructional practices in Kenyan schools. *International Journal of Educational Research and Practice, 10*(2), 45–58.

Citation: Kaburu, R. M., Koros, P., & Mabeya, T. (2026). Effectiveness of in-service training programmes on teachers' instructional quality in public senior schools in Mavoko Sub-County, Machakos County, Kenya. *Journal of Africana Articles, 4*(48), 1-19, 22th September 2026. DOI: https://doi.org/10.5281/zenodo.22899497

Otieno, J., & Wekesa, E. (2021). Competency-based curriculum training and teacher pedagogy in Kenya. *Journal of Curriculum and Teaching Studies, 8*(1), 23–35.

Parmigiani, D. (2025). Training in-service teachers to implement formative assessment: Effects on instructional quality. *Frontiers in Education, 10*, 1695771.

Sakani, R. (2024). *Continuous professional development and teacher effectiveness*.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review, 51*(1), 1–17.

Sengabo, P., Uwimana, A., & Ndayambaje, I. (2025). Effect of in-service training on pedagogical tools and learning outcomes in Rwanda. *African Journal of Teacher Education, 14*(1), 67–82.

Spaull, N., Pretorius, E., & Mohohlwane, N. (2021). Investigating teacher professional development and learning outcomes in South Africa. *Educational Research for Social Change, 10*(1), 1–17.

Talafian, H., Windschitl, M., Thompson, J., & Braaten, M. (2023). Responsive professional development in physics teaching communities: Supporting instructional quality through structured in-service programmes. *Journal of Research in Science Teaching, 60*(5), 1023–1045.

Tashakkori, A., Johnson, R. B., & Teddlie, C. (2021). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. SAGE Publications.

Wanjala, G., & Wanjala, E. (2021). Influence of in-service training on teachers' instructional practices in secondary schools in Kenya. *Educational Research and Reviews, 16*(6), 195–203. https://doi.org/10.5897/ERR2021.4131