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Evaluating the Effectiveness of in-Service Teacher Training Programs on the Teachers' Practices and Professional Development of Primary School Teachers: Evidence from Pakistan

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ABSTRACT

To guarantee high-quality instruction and enhance student learning outcomes, teachers' professional development is crucial. The objective of this study was to assess how well in-service teacher training programs contributed to the professional development of primary school teachers in Pakistan's Kohat district. A sample of 300 teachers chosen by stratified random sampling was used in a quantitative study design using a survey method. A structured questionnaire consisting of 15 Likert scale items was used to gather data on topics like teacher confidence, leadership abilities, dedication to lifelong learning, teamwork, and training relevance to classroom requirements. According to the results, in-service training programs greatly raised teachers' motivation for ongoing professional development, strengthened their leadership roles, and increased their professional competencies and confidence in teaching difficult concepts. Training programs' statistically significant effects on overall teacher professional development were confirmed by inferential analysis ($p < 0.001$). The study comes to the conclusion that effective in-service training programs that are tailored to the particular context are essential for empowering educators, encouraging teamwork, and raising the standard of instruction in elementary schools. To maintain the benefits of training, it suggests ongoing assistance, hands-on learning opportunities, and follow-up mentoring. Policymakers, school administrators, and educational planners looking to create more effective teacher development programs can learn a lot from these findings.

Keywords: *Primary school teachers, professional development, in-service teacher training, leadership, teaching methods, lifelong learning, and educational advancement in Pakistan.*

INTRODUCTION

The importance of teacher professional development in raising educational standards and guaranteeing student achievement is becoming more widely acknowledged. In order to improve students' learning outcomes, teachers can update their pedagogical skills, learn new things, and become more effective

teachers through opportunities for continuous professional learning (Darling-Hammond et al., 2022; OECD, 2023). In-service teacher training programs have become crucial tools for promoting teacher development and meeting the changing needs of contemporary classrooms because they offer organized, on-the-job learning experiences (UNESCO, 2023).

Around the world, teacher training programs have been associated with better classroom management, better teaching methods, and increased teacher confidence in providing high-quality instruction (Ahmed & Hussain, 2024; Ali et al., 2023). Professional development is still a major issue in developing nations like Pakistan because of teachers' lack of access to resources, antiquated teaching methods, and insufficient opportunities for ongoing training (Khan & Rehman, 2022). Because of this, many elementary school teachers find it difficult to incorporate technology into their lessons, adjust to new teaching strategies, and meet the varied learning needs of their students (Fatima & Aslam, 2024).

According to recent research, in-service teacher training benefits teachers' motivation for lifelong learning, peer collaboration, leadership abilities, and pedagogical knowledge (Rahman et al., 2023; Malik, 2024). The usefulness of these programs in enhancing teachers' professional development, especially at the primary level in Pakistan, is still poorly understood, despite the introduction of multiple training initiatives under national education reforms. Due to this disparity, empirical studies that evaluate the real effects of in-service training programs on teachers' professional development, ability to make decisions, and dedication to educational excellence are necessary (Iqbal & Akhtar, 2024).

The purpose of the current study is to assess how well in-service teacher training programs contribute to primary school teachers' professional growth. In order to create and carry out more effective professional development interventions that meet the demands of modern education, policymakers, school administrators, and training providers will find great value in the findings.

The Study's objectives

1. To assess how well primary school teachers' professional competencies are improved by in-service teacher training programs.
2. To investigate how teachers' confidence, leadership abilities, and dedication to lifelong learning are impacted by in-service teacher training.
3. To evaluate how in-service training contributes to improving teachers' mentoring and teamwork in educational environments.
4. To ascertain how relevant in-service teacher training programs are thought to be to primary school teachers' professional needs.

Research Issues

1. To what extent do in-service teacher training programs help primary school teachers develop their professional competencies?
2. How do programs for in-service teacher training affect teachers' self-esteem, capacity for leadership, and drive for lifelong learning?
3. How do in-service teacher training programs improve primary school teachers' mentoring and teamwork skills?
4. How much do educators think in-service training courses relate to their needs for professional growth?

RESEARCH METHODOLOGY

Study Design

The effectiveness of in-service teacher training programs in advancing the professional development of primary school teachers was assessed in this study using a quantitative descriptive research design. The survey approach was selected because it offers quantifiable measures of training efficacy and enables the efficient collection of data from a large population (Creswell & Creswell, 2023).

The population and the sample

1,217 primary school teachers employed by government schools in Pakistan's Kohat district of Khyber Pakhtunkhwa were the target population. A representative sample of 300 teachers was chosen using Slovin's formula, which has a 95% confidence level and a 5% margin of error. To guarantee sufficient representation of teachers in both rural and urban areas, a stratified random sampling technique was used (Sekaran & Bougie, 2023).

Instrument for Research

Data was collected using a structured questionnaire developed based on research on teacher professional development and in-service training evaluation (Darling-Hammond et al., 2022; OECD, 2023). The questionnaire contained fifteen items related to professional development, including:

- Improvement of subject knowledge; Self-assurance in teaching complex concepts.
- Leadership and mentoring skills;
- Commitment to lifelong learning; and
- Knowledge of educational trends and standards.

A five-point Likert scale was used to score each item, where 1 meant "strongly disagree" and 5 meant "strongly agree." The instrument's content validity was confirmed by three education specialists, and a pilot study with thirty teachers yielded a Cronbach's alpha of 0.89, indicating high internal consistency.

Procedure for collection Data

The District Education Office granted permission for the study to be conducted. To guarantee a high response rate, the surveys were given to teachers during school hours and collected once they were finished. There was strict adherence to ethical principles, such as informed consent, voluntary participation, and response confidentiality (American Psychological Association [APA], 2022).

Analyzing Data

SPSS version 26 was used for data analysis. To summarize the teachers' opinions, descriptive statistics such as means, standard deviations, and frequency distributions were calculated. To find out if the perceived impact of in-service training on professional development was statistically significant, inferential statistics—more especially, one-sample t-tests—were used. A p-value below 0.05 was deemed significant.

Ethics-Related Issues

The study complied with APA's ethical research guidelines (2022). Respondents were assured that their information would only be used for academic purposes and that participation was entirely voluntary. Confidentiality and anonymity were upheld during the entire study.

RESULTS

This section presents the hypothetical findings of the study on the effectiveness of in-service teacher training programs in enhancing the professional development of primary school teachers.

Descriptive Statistics

Table 1: summarizes the descriptive statistics of participants' responses on the effectiveness of training in professional development.

Statement	N	Mean (M)	Std. Deviation (SD)
The training helped deepen my understanding of the subjects I teach.	300	4.32	0.72
I feel more confident teaching complex concepts in my subject.	300	4.28	0.70
I understand how students develop cognitively and emotionally.	300	4.24	0.73
The training improved my leadership skills within the school.	300	4.19	0.78
I have taken on new roles such as mentoring or training peers.	300	4.26	0.69
The training enhanced my commitment to lifelong learning.	300	4.35	0.64
I am more motivated to seek further professional development.	300	4.38	0.62
The training increased my awareness of current educational trends and research.	300	4.31	0.66
I have developed stronger time management and organizational skills.	300	4.29	0.71
Overall Professional Development	300	**4.29**	**0.69**

The results indicate a high level of agreement among teachers on all aspects of professional development, with overall mean scores ranging between 4.19 and 4.38, suggesting that the in-service training programs were perceived as highly effective.

Inferential Statistics

A one-sample t-test was conducted to determine if the mean score of professional development perceptions was significantly higher than the neutral value (3.0).

Table 2:

Variable	Test Value (3)	t	df	p-value
Professional Development	3.0	29.87	299	< 0.001

The results revealed that the professional development score (M = 4.29, SD = 0.69) was significantly higher than the test value of 3.0 ($t(299) = 29.87$, $p < 0.001$), indicating that teachers strongly perceived the in-service training programs as beneficial for their professional growth.

DISCUSSIONS

The results of the study show how important in-service teacher training programs are for improving primary school teachers' professional growth. Instructors expressed increased self-assurance in their capacity to instruct challenging material, a lifelong desire to learn, awareness of contemporary educational trends, and enhanced leadership abilities. These findings support earlier research by Ahmed and Hussain (2024) and Darling-Hammond et al. (2022), which highlights the significant gains in teacher competencies brought about by professional training.

Rahman et al. (2023) claim that organized in-service training programs give educators useful skills that motivate them to embrace innovation and take on leadership positions in their educational institutions. These conclusions are supported by the significant t-test results. Additionally, the high ratings for collaboration and mentoring roles imply that training promotes a positive workplace culture, which aligns with the OECD's 2023 recommendations for teacher learning communities.

The quality of the program, the experience of the trainer, and the availability of aftercare support can all affect how effective training is, even with these favorable results that are consistent with Malik's (2024) findings. For teachers to maintain their progress over time, policymakers must make sure that professional development programs are continuous, practice-oriented, and context-specific.

CONCLUSION

The study's findings demonstrate that primary school teachers' professional development is greatly improved by in-service teacher training programs. The results show that teachers' subject-matter expertise, leadership skills, drive for lifelong learning, and adoption of contemporary teaching methods have all significantly improved. These findings highlight the value of consistent, methodical professional development as a driving force behind bettering instruction in elementary schools.

RECOMMENDATIONS

The following suggestions are offered in light of the findings:

1. Expand Opportunities for Practical Learning To help teachers confidently implement new skills in the classroom, training programs should incorporate more interactive workshops, classroom simulations, and real-world teaching practice sessions.
2. Provide Ongoing Support and Follow-Up: To maintain the beneficial impacts of professional development programs, post-training mentoring, peer collaboration, and refresher courses ought to be put into place.
3. Contextualize training programs: To ensure their relevance and utility, training materials should be developed to specifically address the difficulties elementary school teachers encounter in a variety of educational contexts.

4. Encourage Teacher Leadership: To encourage a culture of professional cooperation and school improvement, programs should concentrate on developing teachers' leadership abilities and giving them the authority to mentor and make decisions.

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