



Impact of Teacher Professional Development Programme on Teaching Effectiveness among Secondary School Teachers in the Kashmir Valley

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Abstract

The present study is an investigation on the relationship between teacher professional development (TPD) and classroom teaching effectiveness of secondary school teachers in Kashmir valley. Data on standardized Teacher Professional Development Index (TPDI, $\alpha = .88$) and Teacher Effectiveness Scale (TES, $\alpha = .91$) were collected through Descriptive correlational survey design from stratified random sample of 300 secondary school teachers ($N = 300$) from three representative districts (Srinagar, Baramulla and Anantnag). The Pearson product-moment correlation analysis revealed a strong, positive, and statistically significant relationship between TPD participation and overall teaching effectiveness ($r = .64, p < .01$). Independent samples t -tests indicated that teachers with high professional development engagement had significantly higher instructional effectiveness than teachers with low engagement ($t = 9.87, p < .001, d = 1.14$). There was no statistically significant difference by teacher gender ($p = .461$), but a large performance gap favoring urban over rural teachers ($t = 3.78, p < .001$). One-way ANOVA revealed statistically significant differences across teaching experience ($F=7.24, p=.001$) with mid-career educators (5–15 years) performing better than early-career educators. Multiple regression analysis revealed that TPD dimensions predicted 50.7% of the variance in teaching effectiveness ($R^2 = .507, p < .001$). General pedagogical training was the strongest predictor ($\beta = .412$). The findings emphasize the need of decentralized school-based professional learning community, contextualized digital training and dedicated pedagogical support for rural secondary schools across Jammu and Kashmir.

Keywords: Teacher Professional Development, Teaching Effectiveness, Secondary Education, Rural-Urban Disparity, Kashmir, In-Service Training.

Introduction

Teacher professional development (TPD) is recognized as an important part of modern educational reform and a way to improve classroom practice and foster more genuine student engagement (Darling-Hammond et al., 2017). TPD as a broad concept refers to structured, continuous professional learning including formal in-service workshops, curriculum enrichment, online literacy modules (e.g. NISHTHA and Samagra Shiksha initiatives) and peer mentoring. These efforts are intended to improve teachers' pedagogical content knowledge, classroom management, and formative assessment practices (Guskey, 2002). The true impact of education in the new, spatially differentiated areas depends on how teachers internalize what they learn in their training hall to invigorate their day-to-day classrooms (Avalos, 2011; Popova et al., 2022).

The ecology, geography and the systemic realities of the schooling landscape of the Kashmir region of Jammu and Kashmir (J&K) are particular. Harsh winters with long institutional closures, geographically isolated rural settlements, disparities in access to learning technology in public and private schools and curricular changes due to National Education Policy (NEP) 2020, added immense pressures on teachers. Kashmir Valley teachers will likely move away from rigid, lecture-based teaching to interactive, inquiry-led and tech-backed styles. Understanding the impact of formal professional development on the core aspects of teaching effectiveness, including lesson planning and delivery, classroom culture and student assessment, is critical to guiding meaningful educational policy in the region.

Need and Importance of the Study

Jammu and Kashmir has spent huge resources on the professional development of in service teachers through SCERT, DIETs and national programs. However, there is little empirical evidence of the translation of such interventions into everyday classroom practice. Most official evaluations rely on attendance numbers and short-term, immediate impressions from a session and measure compliance, not change in pedagogical competence. The institutional reliance on output measures puts serious questions on whether training modules really improve the quality of teaching in the region.

At the same time the regional differences are very important for effectiveness of the application of the new teaching methods. The problems of urban teachers like Srinagar are very different from those of rural high altitude teachers in Baramulla or Anantnag. In rural areas, teachers need to teach multiple grades, and they don't have reliable electricity and connectivity, and they lack adequate ongoing mentoring after training. A more thorough and localized analysis is required to evaluate the effect of these contextual and demographic variables on the professional development outcomes, and to produce useful information for DIET educators and regional policy makers who wish to plan training that is responsive to classroom realities.

Objectives of the Study

1. To study the relationship of Teacher Professional Development (TPD) participation with the specific dimensions of Teaching Effectiveness of secondary school teachers in Kashmir Valley.

2. To find out the significant differences in overall Teaching Effectiveness of teachers with high and low participation in TPD.
3. To study whether there exists any significant differences in Teaching Effectiveness among secondary school teachers based on Gender
4. To study whether there exists any significant differences in Teaching Effectiveness among secondary school teachers based on Locale (urban vs. rural).
5. To compare the Teaching Effectiveness in different categories of teaching experience (Below 5 Years, 5-15 Years and Above 15 Years).
6. To find out the relative contribution of TPD dimensions (Pedagogical Training, Online Literacy Training and Subject Mastery Workshops) in predicting overall Teaching Effectiveness.

Hypotheses of the Study

1. **H₀₁**: No significant relationship exists between Teacher Professional Development (TPD) participation and dimensions of Teaching Effectiveness among secondary school teachers of Kashmir.
2. **H₀₂**: There is no significant difference in Teaching Effectiveness between secondary school teachers with high and low level participation in TPD.
3. **H₀₃**: No significant difference in Teaching Effectiveness of male and female teachers of secondary school.
4. **H₀₄**: There is no significant difference in Teaching Effectiveness of urban and rural secondary school teachers.
5. **H₀₅**: There is no significant difference in Teaching Effectiveness among the secondary school teachers in relation to their teaching experience.
6. **H₀₆**: Dimensions of TPD (Pedagogical Training, Online Literacy Training and Subject Mastery Workshops) do not significantly predict Teaching Effectiveness of secondary school teachers in Kashmir.

Review of Related Literature:

Nadeem and Mudasir (2012) examined the relationship between teacher competence, teaching effectiveness and professional attitudes of secondary school teachers in Kashmir and reported a strong statistically significant correlation between pedagogical competency and classroom delivery. They found that systematic in-service enrichment directly improved teachers' instructional self-efficacy. Rather and Lone (2015) studied the organizational climate and professional commitment of secondary school teachers of Pulwama and Srinagar districts of Kashmir. They concluded that continuous professional development opportunities, formal institutional training, and collaborative working conditions significantly improve teachers' motivation and commitment to teaching. Mudasir and Yaseen (2014) investigated the effectiveness of teaching among trained and untrained teachers in Jammu and Kashmir and found that formally trained teachers scored significantly higher in aspects of instructional

planning, classroom control and evaluation of students than untrained teachers. In a study on in-service teacher education mechanisms, Bhat (2017) investigated the operational challenges of District Institutes of Education and Training (DIETs) in Kashmir division and concluded that although teacher orientation programs improved theoretical knowledge, the actual transfer to classroom transaction was minimal due to excessive work load, short duration of training and lack of continuous school based follow up. Padhan et al. (2020) looked at national capacity-building initiatives and found that the structured modular training of the national NISHTHA integrated teacher training program across secondary and elementary schools significantly upgraded teachers' formative assessment literacy, inclusive classroom practices and student-centered pedagogical orientation.

Methodology of the Study

The methodology of the study is presented in detail below

Design of Research

This study used a descriptive, quantitative survey design with correlational, comparative and predictive regression analyses to examine the relationship between professional development and quantifiable classroom teaching effectiveness.

Population and Sample

The population of the study consisted of all full time secondary school teachers (Grades 9 and 10) of government and private secondary schools of Kashmir Valley. A multistage stratified random sampling was adopted to select 300 teachers (N=300) from three administrative districts of Kashmir representing central, northern and southern belts of Kashmir: Srinagar, Baramulla and Anantnag. The survey involved 158 male and 142 female teachers. 160 teachers worked in urban institutions and 140 in rural schools.

Research tools used

1. Teacher Professional Development Index (TPDI) This 24-item instrument, adapted from Guskey's (2002) evaluation model, measures the frequency of training and perceived classroom relevance in three separate components: Pedagogical Training (PT), Digital/ICT Literacy Training (DLT) and Subject-Matter Enrichment (SME). Responses are rated on a 5-point Likert scale from 1 (Never / Strongly Disagree) to 5 (Very Frequently / Strongly Agree). Internal consistency was confirmed with a Cronbach's alpha of $\alpha = .88$.
2. Teacher Effectiveness Scale (TES): A 32-item instrument to measure four core operational areas: Instructional Planning (IP), Pedagogical Delivery & Methodology (PDM), Classroom Environment & Management (CEM) and Student Assessment Literacy (SAL) adapted from the Danielson's Framework for Teaching. Items are rated on a 5 point Likert scale (1=Low Effectiveness, 5=High Effectiveness). The content validity of the scale was checked by a panel of teacher education faculty members at the University of Kashmir and the overall scale reliability was found to be Cronbach's $\alpha = .91$.

Procedure of Data Collection

Data were obtained through scheduled survey sessions and direct school visits on-site. School administrators were contacted in advance for permission and all the participating teachers gave an informed consent. Of the 320 questionnaires distributed, 300 complete and clean response sets were left for statistical processing (93.7% return rate).

Analysis and Interpretation

Table 1: Pearson Product-Moment Correlations Between TPD Dimensions and Teaching Effectiveness

Dimensions	1	2	3	4	5	6	7	8
1. Pedagogical Training (PT)	1.00							
2. Digital Literacy (DLT)	.48**	1.00						
3. Subject Enrichment (SME)	.54**	.42**	1.00					
4. Instructional Planning	.51**	.38**	.49**	1.00				
5. Pedagogical Delivery	.62**	.45**	.53**	.58**	1.00			
6. Classroom Management	.44**	.34**	.41**	.46**	.52**	1.00		
7. Assessment Literacy	.48**	.39**	.46**	.43**	.50**	.47**	1.00	
8. Overall Teaching Effectiveness	.64**	.47**	.58**	.74**	.82**	.71**	.69**	1.00

* $p < .05$, ** $p < .01$ (2-tailed).

Table 1 reveals a strong, statistically significant positive association between overall TPD participation and total Teaching Effectiveness ($r = .64$, $p < .01$). In analyzing the individual components, general pedagogical training was most strongly associated with actual classroom delivery ($r = .62$, $p < .01$) and instructional planning ($r = .51$, $p < .01$). There is also a rather strong association between the enrichment of subject matter and the delivery of teaching ($r = .53$, $p < .01$). All the pedagogical indicators were positively correlated with online literacy training, with the correlation with classroom management being somewhat weaker ($r = .34$, $p < .01$). The first null hypothesis (H01) is rejected as all the values of correlations are positive and significant at .01 level.

Table 2: Comparison of Teaching Effectiveness Across Levels of TPD Participation

TPD Participation Group	N	Mean (M)	Std. Deviation (SD)	t-value	df	p-value	Cohen's d
High TPD	154	125.42	14.12	9.87	298	< .001	1.14
Low TPD	146	107.81	16.75				

Table 2 shows a clear, statistically significant difference between teachers with high and low exposure to professional development in terms of Teaching Effectiveness ($t(298) = 9.87$, $p < .001$). Teachers who engaged in training programs had significantly higher effectiveness scores ($M = 125.42$, $SD = 14.12$) than those who had fewer or less comprehensive training sessions ($M = 107.81$, $SD = 16.75$). The calculated effect size (Cohen's $d = 1.14$) shows this difference translates into a large, practically meaningful educational advantage. So the second null hypothesis (H_{02}) is rejected.

Table 3: Comparison of Teaching Effectiveness by Gender and School Location

Demographic Variable	Sub-Group	N	Mean (M)	SD	t-value	df	p-value
Gender	Male	158	116.12	17.65	-0.74	298	.461
	Female	142	117.66	17.11			
School Location	Urban	160	120.35	16.42	3.78	298	< .001
	Rural	140	112.85	17.64			

Table 3 shows that female teachers recorded slightly higher effectiveness scores ($M = 117.66$, $SD = 17.11$) than male teachers ($M = 116.12$, $SD = 17.65$), but this small difference is not statistically significant ($t(298) = -0.74$, $p = .461$). Thus, null hypothesis H_{03} is accepted. In contrast, Table 3 shows a statistically significant performance gap between urban and rural teachers ($t(298) = 3.78$, $p < .001$). Teachers in urban secondary schools scored considerably higher on instructional effectiveness ($M = 120.35$, $SD = 16.42$) than those working in rural schools ($M = 112.85$, $SD = 17.64$). Therefore, null hypothesis H_{04} is rejected.

Table 4: One-Way ANOVA of Teaching Effectiveness Across Categories of Teaching Experience

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-value	p-value	η^2
Between Groups	4,218.46	2	2,109.23	7.24	.001	.046
Within Groups	86,524.18	297	291.33			
Total	90,742.64	299				

Table 4 shows a statistically significant difference in Teaching Effectiveness across levels of teaching experience ($F(2, 297) = 7.24, p = .001$). Post-hoc Tukey HSD tests revealed that mid-career teachers (5–15 years of experience; $M = 120.15, SD = 16.20$) scored significantly higher than novice teachers with less than 5 years of service ($M = 112.40, SD = 17.85, p = .002$). Senior teachers with over 15 years of service ($M = 117.90, SD = 17.30$) also outscored the novice cohort, though they did not differ significantly from the mid-career group. The partial eta squared ($\eta^2 = .046$) points to a modest but meaningful developmental effect. Consequently, null hypothesis H_{05} is rejected.

Table 5: Multiple Linear Regression Predicting Teaching Effectiveness from TPD Dimensions

Model Predictors	Unstandardized B	Std. Error	Standardized β	t-value	p-value	Collinearity (VIF)
(Constant)	34.12	5.21	—	6.55	< .001	—
Pedagogical Training (PT)	1.48	0.18	.412	8.22	< .001	1.46
Digital Literacy (DLT)	0.65	0.16	.191	4.06	< .001	1.32
Subject Enrichment (SME)	1.12	0.19	.284	5.89	< .001	1.41

Note. $R = .712, R^2 = .507, Adjusted R^2 = .502, F(3, 296) = 101.48, p < .001$.

Table 5 shows that the three components of professional development together explain just over half of the variance in secondary school teaching effectiveness ($R^2 = .507, Adjusted R^2 = .502, F(3, 296) = 101.48, p < .001$). Each training dimension contributes positively and significantly to the model. General Pedagogical Training carries the strongest weight ($\beta = .412, t = 8.22, p < .001$), followed by Subject-Matter Enrichment ($\beta = .284, t = 5.89, p < .001$) and Digital Literacy Training ($\beta = .191, t = 4.06, p < .001$). Multicollinearity tests reveal good tolerance as the Variance Inflation Factor (VIF) values are well below 1.50. The predictors are significantly contributing in the model so we reject the null hypothesis H_{06} .

Major Findings of the Study

1. There is a strong, positive and statistically significant relationship between professional development participation and teaching effectiveness of secondary school teachers in Kashmir.
2. Teachers who are highly involved in professional development have significantly higher scores on teaching effectiveness than those who are less involved, with a large effect size.
3. No significant difference in instructional effectiveness by teacher gender, suggesting that both male and female teachers benefit professionally in equal measure from in-service programs.

4. There is a marked geographical divide, with teachers in urban schools more effective in instruction than those in rural schools.
5. Teaching experience is a major driver of performance differences, with mid-career teachers performing better than their less experienced peers.
6. About 51% of the variance in classroom teaching effectiveness can be explained by professional development dimensions, with foundational pedagogical training being the single strongest predictor.

Discussion

The findings indicate that in Kashmir, Teacher Professional Development is not merely a managerial need but an important impetus for improved classroom teaching. The model's strong linear correlation ($r = .64$) and predictive strength ($R^2 = .507$) are in line with the global insights of Darling-Hammond et al. (2017) and Desimone and Garet (2015). Teachers' confidence and clarity of instruction are greatly enhanced when they have regular opportunities to explore practical pedagogical approaches, learn new ways of managing their classrooms and practice modern assessment methods. The large effect size ($d = 1.14$) in performance between high and low participation groups is consistent with Mudasir and Yaseen (2014) findings in Jammu and Kashmir, which showed that structured pedagogical training significantly improves educators' ability to manage diverse classrooms over and above experience.

A look at the various training components shows the daily realities of Kashmiri classrooms. The major predictors of classroom success were Pedagogical Training ($\beta = .412$) and Subject Enrichment ($\beta = .284$) which is in line with the findings of Nadeem and Mudasir (2012) who pointed out the key role of core teaching competence. In contrast, the standard e-literacy Training had a smaller beta weight ($\beta = .191$). This difference is a reflection of the practical challenges highlighted by Bhat (2017) in which programs like NISHTHA expose teachers to digital resources and modern software (Padhan et al., 2020). However, the translation of such learnings into regular classroom practices is often impeded by inadequate computer labs, erratic power supply, and the absence of local IT troubleshooting support, especially in government schools.

There was no significant difference between male and female teachers ($p = .461$) which is in line with the findings of Rather and Lone (2015) that commitment and teaching skills develop equally in both genders when institutional support is easily available. Yet, the urban-rural divide ($t = 3.78$, $p < .001$) shows more systemic inequities. According to Bhat (2017), the rural schools in the periphery of the Valley are structurally burdened with frequent transfers of teachers, composite classes, and long distances from DIET resource centers. Popova et al. (2022) and Avalos (2011) have demonstrated that when training is offered as a one-off workshop, with no classroom coaching, the impact of the training is lost, and it is rural teachers who are most affected by this lack of continuous support.

Finally, the difference found across career stages ($F = 7.24$, $p = .001$) suggests that pedagogical competence develops with experience. Mid-career teachers seem well suited to practice training. They have developed sufficient basic classroom comfort to move beyond basic crowd control, but are still receptive to using newer learner-centered techniques. For example, early-career teachers often find it difficult to strike a balance between basic curriculum pacing and the pedagogical demands of the 21st century as introduced in workshops, and this illustrates the importance of targeted induction mentoring in the early years on the job.

Summary

Structured In-service Professional Development significantly impacts the effectiveness of secondary school teaching in Kashmir valley. Teachers who participate consistently report more confidence in planning lessons, facilitating discussions, managing classroom routines, and assessing student progress. But systemic challenges, especially the rural-urban resource divide and differential access to instructional technology, mean these pedagogical gains aren't reaching all classrooms equally.

Educational Implications of the Study

1. Decentralize Training Delivery: The SCERT J&K and regional DIETs should replace centralized, lecture-based seminars with school-based Professional Learning Communities (PLCs) where teachers work together on practical challenges in their immediate school environment.
2. On-Site Coaching to Rural Schools Education authorities should schedule regular coaching and follow-up mentoring visits to rural and high-altitude areas to ensure that isolated teachers receive the support they need to put new teaching approaches into practice.
3. Digital Training in Context Basic hardware & reliable power solutions for peripheral schools & digital workshops based on offline-friendly tools & practical classroom applications, not generic computer literacy.
4. Provide the right support at all stages of the career: Training should reflect career experience. New teachers gain more from practical classroom-management induction; mid-career teachers gain more from advanced subject enrichment and leadership pathways.
5. Shift to Rubric-Based Classroom Monitoring: Education leaders should move beyond basic attendance monitoring to developmental, rubric-based classroom observations that track how in-service training actually translates into daily instructional quality and student learning over time.

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