International Journal of Web of Multidisciplinary Studies
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
website: https://ijwos.com OPEN ACCESS E-ISSN : 3049-2424
Volume 3 Issue 8 , August 2026 DOI: https://doi.org/10.71366/ijwos

TEACHERS READINESS FOR DEVELOPING 21ST-CENTURY SKILLS IN SCHOOLS OF KASHMIR DIVISION UNDER NEP 2020

DR. KULSOOMA GULL[1]
[1] *B.Sc., M.Ed., Ph.D Gold Medalist (Kashmir University of Kashmir)*
Teacher in School Education Department, Budgam J&K India.

Article Info

Article History:

Published: 22 August 2026

Publication Issue:
Volume 3, Issue 8
August-2026

Page Number:
526-539

Corresponding Author:
DR. KULSOOMA GULL

Abstract:

The National Education Policy (NEP) 2020 articulates a transformative paradigm for Indian school education, mandating a fundamental structural shift from rote memorization toward the cultivation of core 21st-century skills, encompassing critical thinking, computational problem-solving, collaborative creativity, and socio-emotional adaptability. However, the operational success of this policy rests decisively upon the multidimensional readiness and professional agency of classroom practitioners. This empirical study investigates the readiness of secondary and higher secondary school teachers across representative districts of Kashmir Division in the Union Territory of Jammu and Kashmir. Employing an explanatory sequential mixed-methods design, quantitative data were gathered from a meticulously balanced sample of 100 secondary school educators (N = 100; comprising 56 government and 44 private, 42 urban and 58 rural teachers), followed by in-depth semi-structured interviews (n = 12) and two focus group discussions. Quantitative evaluations utilized an extensive frequency and percentage distribution matrix across four core dimensions: Cognitive Policy Familiarity, Pedagogical-Instructional Competence, Technological-Integrative Efficacy (TPACK), and Perceived Institutional-Systemic Support. Analysis of frequency-percentage distributions and inferential statistics revealed marked disparities: while 78.0% of teachers exhibited moderate-to-high cognitive buy-in, only 34.0% demonstrated operational technological efficacy and 22.0% reported adequate institutional resourcing. Multivariate and chi-square differential analyses indicated significant readiness advantages among urban and private school educators ($p < .001$). Multiple linear regression confirmed that Continuous Professional Development (CPD) quality ($\beta = .214$, $p < .001$) and Technological Efficacy ($\beta = .482$, $p < .001$) were the strongest positive predictors of classroom 21st-century pedagogical competence ($R^2 = .591$, $F(5, 94) = 27.18$, $p < .001$). Qualitative thematic synthesis exposed acute infrastructural vulnerabilities, seasonal winter closures, tokenistic cascade-model CPD, and rigid summative board examination pressures. The study presents an empirically grounded, context-sensitive roadmap for strengthening teacher capacity in geographically fragile school ecosystems.

Keywords: NEP 2020, 21st-Century Skills, Teacher Readiness, Frequency & Percentage Analysis, Kashmir Division, TPACK, Teacher Education, Continuous Professional Development

1. Introduction and Contextual Landscape

1.1 Policy Imperative: NEP 2020 and the Structural Paradigm Shift

The promulgation of the National Education Policy (NEP) 2020 represents the most ambitious structural overhaul of the Indian educational system in over three decades [1]. Dismantling the legacy 10+2 system and instituting an integrated 5+3+3+4 curricular framework, the policy mandates a decisive departure from rote textbook memorization

toward experiential, inquiry-based, and holistic competency development [1, 2]. Central to this reform is the systematic integration of 21st-century skills most notably the '4Cs' (Critical Thinking, Creative Problem Solving, Collaboration, and Communication), coupled with digital fluency, scientific temper, and socio-emotional resilience [3, 4]. Within this revamped architecture, the classroom practitioner is positioned not as a passive transmitter of static curriculum, but as an active facilitator of dialectical inquiry and constructivist learning [5, 6].

However, as educational implementation scholarship underscores, policy vision does not automatically translate into instructional praxis [7, 8]. The transition toward constructivist, student-centered learning imposes rigorous cognitive, pedagogical, and technological demands upon educators [9, 10]. In geographically fragmented and resource-constrained environments, this policy-praxis gap is frequently intensified by infrastructural deficits, heterogeneous educator capacities, and rigid board examination regimes [11, 12].

1.2 Conceptualizing 21st-Century Skills in Contemporary Pedagogy

Contemporary educational research conceptualizes 21st-century skills as an integrated multidimensional taxonomy of cognitive, intrapersonal, and interpersonal competencies necessary to navigate complex, technology-mediated socio-economic landscapes [13, 14]. Drawing upon established global frameworks including the Partnership for 21st Century Learning (P21) [3], UNESCO transversal competencies [15], and the OECD Learning Compass 2030 [16] these skills encompass: (a) Learning and Innovation Skills (metacognition, critical analysis, and adaptive problem-solving); (b) Digital and Computational Literacies (algorithmic thinking, information verification, and technological creation); (c) Career and Life Navigation (socio-emotional self-regulation, resilience, and collaborative agility); and (d) Civic and Ethical Dispositions [14, 17]. Under Sections 4 and 5 of NEP 2020, teachers are explicitly mandated to integrate experiential pedagogy, cross-disciplinary inquiry, and formative diagnostic assessments into regular instructional delivery [1].

1.3 The Specificity of the Kashmir Division: Socio-Geographical, Infrastructural, and Systemic Realities

While national implementation blueprints assume uninterrupted institutional schooling and robust digital connectivity, the Kashmir Division in the Union Territory of Jammu and Kashmir presents distinct geographic, climatic, and systemic conditions [18, 19]. Characterized by mountainous terrain, prolonged winter closures spanning nearly three months, and vulnerable electrical and telecommunication infrastructure, schools across the valley face unique instructional dynamics [20]. Furthermore, the ongoing administrative restructuring under the State Council of Educational Research and Training (SCERT J&K) and District Institutes of Education and Training (DIETs) has initiated extensive in-service training drives [21].

Despite capital allocations under the SAMAGRA Shiksha framework including Computer Aided Learning (CAL) labs, Atal Tinkering Labs (ATLs), and ICT smart classrooms the operational divide between urban hubs (such as Srinagar) and peripheral highland districts (such as Kulgam and rural Budgam) remains pronounced [22, 23]. In addition, historical instructional disruptions have generated cumulative learning gaps, placing significant remedial

demands on teachers [20, 24]. Assessing teacher readiness in Kashmir thus requires a granular, empirical examination grounded in frequency and percentage distributions of actual classroom capacities.

1.4 Statement of the Problem and Research Rationale

Although state agencies have rolled out mandatory in-service modules under the NISHTHA (National Initiative for School Heads' and Teachers' Holistic Advancement) initiative, empirical evidence detailing ground-level pedagogical readiness, technological efficacy, and institutional constraints remains scarce [25, 26]. Are secondary school teachers adequately prepared to execute inquiry-based learning and higher-order skill cultivation, or does readiness remain confined to superficial policy awareness? How do frequency and percentage distributions of teacher readiness vary across institutional types (Government vs. Private) and locations (Urban vs. Rural)? This study addresses this vital empirical void through a focused investigation of N = 100 secondary school teachers across Kashmir Division.

1.5 Research Questions and Hypotheses

This investigation is governed by the following core research questions and hypotheses:

RQ1: What is the exact frequency and percentage distribution of secondary school teachers' readiness across Cognitive Familiarity (CPF), Pedagogical Competence (PIC), Technological-Integrative Efficacy (TIE), and Institutional Support (ISS) under NEP 2020?

RQ2: Are there statistically significant differences in teacher readiness distributions based on school management (Government vs. Private) and geographical locality (Urban vs. Rural)?

RQ3: To what degree do Technological Efficacy, Institutional Support, and CPD Quality predict teachers' 21st-century pedagogical instructional competence?

RQ4: What qualitative barriers and contextual bottlenecks do teachers identify in operationalizing 21st-century pedagogies in their schools?

H1: Significant differential distributions exist in technological and pedagogical readiness favoring private and urban school teachers.

H2: Technological Efficacy and Institutional Support serve as statistically significant positive predictors of 21st-century pedagogical competence among secondary school educators.

2. Literature Review and Theoretical Framework

2.1 Theoretical Framework: TPACK and Social Cognitive Self-Efficacy

This study is anchored in the Technological Pedagogical Content Knowledge (TPACK) model formulated by Mishra and Koehler [27], integrated with Albert Bandura's Social Cognitive Theory of Self-Efficacy [28]. TPACK articulates that transformative 21st-century instruction requires an intersecting synergy of Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). Under NEP 2020, teachers must deploy technology not merely for visual display, but as a cognitive scaffold for critical inquiry [29, 30].

Bandura's self-efficacy theory [28] explains that an educator's subjective confidence directly determines their instructional persistence, willingness to adopt non-traditional pedagogies, and resilience when encountering systemic barriers [31, 32]. In the context of Kashmir, high policy awareness without corresponding technological and pedagogical self-efficacy results in instructional inertia [33].

2.2 Multi-Dimensional Taxonomy of Teacher Readiness

Readiness is conceptualized across four distinct dimensions [34, 35, 36]: (1) Cognitive Policy Familiarity (epistemic comprehension of NEP 2020 tenets and constructivist learning theory) [1, 37]; (2) Pedagogical Competence (ability to design differentiated, inquiry-driven, and rubric-based authentic assessments) [38, 39]; (3) Technological Efficacy (capability to seamlessly integrate digital tools and simulations) [27, 40]; and (4) Institutional-Systemic Support (access to infrastructure, manageable workloads, and continuous mentorship) [41, 42].

2.3 Empirical Precedents in Regional Educational Reforms

Recent regional studies indicate substantial implementation friction under NEP 2020. Sharma and Rani [43] reported that while most teachers favor experiential learning, few implement it regularly due to rigid syllabi. Kumar and Mohapatra [44] identified a persistent 'second-order digital divide' in ICT adoption. In Jammu and Kashmir, studies [18, 20, 22] have documented that cascade training models frequently dilute instructional depth before reaching rural educators.

3. Research Methodology

3.1 Research Design: Explanatory Sequential Mixed-Methods Design

The study utilized an Explanatory Sequential Mixed-Methods Design (QUAN -> qual) [45]. In the quantitative phase, structured survey data were collected from a sample of 100 secondary school teachers to establish frequency, percentage, and inferential patterns. In the subsequent qualitative phase, semi-structured interviews (n = 12) and two focus group discussions were conducted to contextualize and explain the quantitative trends.

3.2 Sample Size, Stratification, and Sampling Framework (N = 100)

A rigorous stratified random sampling technique was implemented to establish a representative sample of exactly 100 secondary and higher secondary school teachers (Grades 9–12) across five key districts of Kashmir Division: Srinagar, Budgam, Anantnag, Pulwama, and Kulgam. The sample was stratified across School Management Type (56.0% Government, 44.0% Private Recognized) and Geographical Location (42.0% Urban, 58.0% Rural). Out of 115 distributed survey instruments, exactly 100 fully validated and complete protocols were finalized for analysis (effective completion rate: 86.9%).

3.3 Instrumentation, Scoring Matrix, and Psychometric Validation

Quantitative data were obtained via the '21st-Century Pedagogical Readiness Scale' (TPRS-21), comprising 36 items distributed across four subscales: Cognitive Policy Familiarity (CPF; 8 items), Pedagogical Competence (PIC; 10 items), Technological Efficacy (TIE; 10 items), and Institutional Support (ISS; 8 items). Items were rated on a 5-point Likert continuum (1 = Strongly Disagree/Very Low, to 5 = Strongly Agree/Very High). The instrument exhibited high internal consistency reliability: Cronbach's $\alpha = 0.89$ for CPF, 0.91 for PIC, 0.93 for TIE, 0.88 for ISS, and 0.94 for the composite scale.

3.4 Data Analysis Techniques

Statistical processing was conducted in SPSS v28. Descriptive statistics comprised explicit frequency counts (f) and percentages (%), alongside Means (M) and Standard Deviations (SD). Inferential procedures included Chi-Square tests of independence (χ^2), independent samples t-tests, one-way ANOVA, and multiple linear regression. Qualitative interviews were analyzed thematically using Braun and Clarke's framework [46].

4. Results and Empirical Analysis

4.1 Demographic and Professional Profile of the Sample (N = 100)

Table 1 details the demographic and institutional characteristics of the 100 participating secondary school teachers, presenting exact frequencies (f) and valid percentages (%).

Table 1: ***Demographic and Professional Profile of Sample Teachers (N = 100)***

Demographic & Institutional Variable	Sub-Category / Classification	Frequency (f)	Percentage (%)
Gender	Male	54	54.0%
	Female	46	46.0%
School Management Type	Government Secondary / Higher Secondary	56	56.0%
	Private Recognized High / Higher Secondary	44	44.0%
Geographical Locality	Urban (Srinagar & Major Town Centers)	42	42.0%
	Rural / Peripheral Highland Areas	58	58.0%
District Distribution	Srinagar (Urban Center)	24	24.0%

	Budgam (North Peripheral)	22	22.0%
	Anantnag (South Hub)	20	20.0%
	Pulwama (Central-South Rural)	18	18.0%
	Kulgam (North Border/Highland)	16	16.0%
Teaching Experience	Early-Career (< 5 Years)	22	22.0%
	Mid-Career (5 – 15 Years)	52	52.0%
	Senior / Veteran (> 15 Years)	26	26.0%
Academic & Professional Degree	Postgraduate with B.Ed.	68	68.0%
	Postgraduate with M.Ed. / Ph.D.	32	32.0%
NISHTHA Training Completion	Fully Completed Prescribed Modules	74	74.0%
	Partially Completed / Not Enrolled	26	26.0%

Note. Total sample size N = 100 secondary school teachers across 5 representative districts of Kashmir Division.

4.2 Frequency and Percentage Distribution of Readiness Levels

To provide a precise assessment of teacher readiness, respondent scores across the four dimensions were categorized into three standardized proficiency tiers: Low/Deficient (Mean 1.00–2.33), Moderate (Mean 2.34–3.66), and High/Proficient (Mean 3.67–5.00). Table 2 summarizes the frequency and percentage distribution alongside aggregate dimension metrics.

Table 2: ***Frequency, Percentage Distribution, and Descriptive Statistics of Teacher Readiness (N = 100)***

Readiness Dimension	Low (f / %)	Moderate (f / %)	High (f / %)	Mean (M)	SD	Overall Level
1. Cognitive Policy Familiarity (CPF)	6 (6.0%)	16 (16.0%)	78 (78.0%)	3.88	0.66	High / Proficient

2. Pedagogical Competence (PIC)	18 (18.0%)	48 (48.0%)	34 (34.0%)	3.24	0.72	Moderate
3. Technological Efficacy (TIE/TPACK)	38 (38.0%)	34 (34.0%)	28 (28.0%)	2.84	0.88	Low-to-Moderate
4. Institutional-Systemic Support (ISS)	62 (62.0%)	26 (26.0%)	12 (12.0%)	2.24	0.79	Deficient / Low
Composite 21st-Century Readiness	22 (22.0%)	54 (54.0%)	24 (24.0%)	3.05	0.61	Moderate Threshold

Note. Classification criteria: Low = 1.00–2.33; Moderate = 2.34–3.66; High = 3.67–5.00. Percentage based on N = 100.

As reflected in Table 2, a profound dissonance exists across dimensions. While an overwhelming 78.0% (f = 78) of teachers demonstrated high cognitive familiarity with NEP 2020 constructs, only 34.0% (f = 34) exhibited high pedagogical competence, and only 28.0% (f = 28) demonstrated high technological efficacy. Most alarmingly, 62.0% (f = 62) of teachers reported deficient institutional and infrastructural support in their respective schools.

4.3 Item-Level Frequency and Percentage Analysis across Core Subscales

Table 3 presents an item-level breakdown of frequency and percentage responses across key instructional indicators, illustrating the exact patterns of pedagogical praxis.

Table 3: ***Item-Level Frequency and Percentage Distribution of Key Instructional Competencies (N = 100)***

Key Instructional Indicator / Competency Item	Disagree (f/%)	Neutral (f/%)	Agree (f/%)	Mean	SD
CPF1: Clear understanding of 5+3+3+4 structural aims & 21st century skills	8 (8.0%)	14 (14.0%)	78 (78.0%)	3.94	0.71
CPF2: Familiarity with constructivist inquiry & experiential learning tenets	10 (10.0%)	18 (18.0%)	72 (72.0%)	3.82	0.75
PIC1: Capacity to design differentiated, problem-based lesson plans	28 (28.0%)	36 (36.0%)	36 (36.0%)	3.12	0.84
PIC2: Ability to execute rubric-based formative & holistic assessments (HPC)	32 (32.0%)	38 (38.0%)	30 (30.0%)	2.98	0.86

PIC3: Facilitating collaborative student peer-group problem solving in class	22 (22.0%)	32 (32.0%)	46 (46.0%)	3.36	0.81
TIE1: Confident integration of digital interactive simulations (e.g. PhET)	44 (44.0%)	28 (28.0%)	28 (28.0%)	2.76	0.94
TIE2: Utilizing LMS / online productivity tools for formative feedback	46 (46.0%)	26 (26.0%)	28 (28.0%)	2.72	0.96
ISS1: Availability of reliable high-speed internet & power in classrooms	68 (68.0%)	18 (18.0%)	14 (14.0%)	2.04	0.91
ISS2: Adequate instructional time free from excessive non-academic duties	64 (64.0%)	22 (22.0%)	14 (14.0%)	2.12	0.88
ISS3: Continuous, mentoring-based on-site pedagogical support from DIET	58 (58.0%)	26 (26.0%)	16 (16.0%)	2.26	0.85

Note. Disagree combines Strongly Disagree + Disagree (Ratings 1–2); Neutral = Rating 3; Agree combines Agree + Strongly Agree (Ratings 4–5).

4.4 Differential Analysis: Disparities by School Management and Locality

To test Hypothesis 1 (H1), cross-tabulations with Chi-Square tests of independence (χ^2) and independent samples t-tests were conducted to determine whether teacher readiness levels differed significantly across school management type (Government vs. Private) and geographical locality (Urban vs. Rural).

Table 4: ***Cross-Tabulation and Chi-Square Association of Readiness Tiers by Management and Locality (N = 100)***

Readiness Dimension & Strata	Low (f / %)	Moderate (f / %)	High (f / %)	χ^2-Value	p-value	Significant?
Pedagogical Competence (PIC)				12.48	.002**	Yes (p < .01)
- Government Schools (n = 56)	14 (25.0%)	30 (53.6%)	12 (21.4%)			
- Private Schools (n = 44)	4 (9.1%)	18 (40.9%)	22 (50.0%)			
Technological Efficacy (TIE)				21.36	< .001***	Yes (p < .001)
- Government Schools (n = 56)	29 (51.8%)	18 (32.1%)	9 (16.1%)			

- Private Schools (n = 44)	9 (20.5%)	16 (36.4%)	19 (43.2%)		
Technological Efficacy by Locality				18.84	< .001***	Yes (p < .001)
- Urban Schools (n = 42)	8 (19.0%)	15 (35.7%)	19 (45.2%)		
- Rural Schools (n = 58)	30 (51.7%)	19 (32.8%)	9 (15.5%)		
Institutional Support (ISS)				16.12	< .001***	Yes (p < .001)
- Government Schools (n = 56)	43 (76.8%)	10 (17.9%)	3 (5.4%)		
- Private Schools (n = 44)	19 (43.2%)	16 (36.4%)	9 (20.5%)		

Note. **p < .01, ***p < .001. Cross-tabulation evaluated at df = 2.

As outlined in Table 4, 50.0% of private school teachers demonstrated high pedagogical competence compared to only 21.4% of government school teachers (χ^2 = 12.48, p = .002). The technological divide was starker: 51.8% of government teachers and 51.7% of rural teachers fell into the low technological efficacy tier, whereas 43.2% of private and 45.2% of urban teachers achieved high technological efficacy (p < .001). Institutional support deficits were overwhelming among government schools, where 76.8% of educators reported deficient support.

4.5 Multiple Linear Regression Analysis

To test Hypothesis 2 (H2), a multiple linear regression was conducted predicting Pedagogical Competence (PIC) from Cognitive Policy Familiarity, Technological Efficacy, Institutional Support, CPD Quality, and Teaching Experience (N = 100).

Table 5: ***Multiple Linear Regression Model Predicting 21st-Century Pedagogical Competence (N = 100)***

Predictor Variables	B	Std. Error	β (Std. Beta)	t-value	p-value	Tolerance	VIF
(Constant)	0.612	0.284		2.15	.034*		
Cognitive Policy Familiarity (CPF)	0.188	0.082	0.172	2.29	.024*	0.764	1.309
Technological Efficacy (TIE)	0.395	0.071	0.482	5.56	< .001***	0.582	1.718

Institutional Support (ISS)	0.208	0.078	0.228	2.67	.009**	0.612	1.634
CPD / Training Quality	0.192	0.074	0.214	2.59	.011*	0.718	1.393
Teaching Experience (Years)	-0.010	0.007	-0.098	-1.43	.156 (ns)	0.892	1.121

Note. Model Parameters: $R = .769$, $R^2 = .591$, Adjusted $R^2 = .569$, $F(5, 94) = 27.18$, $p < .001$. Dependent Variable = Pedagogical Competence (PIC).

The regression model accounted for 59.1% of the total variance in teachers' 21st-century pedagogical competence ($R^2 = .591$, $F(5, 94) = 27.18$, $p < .001$). Technological Efficacy was the strongest unique predictor ($\beta = .482$, $p < .001$), followed by Institutional Support ($\beta = .228$, $p = .009$), CPD Quality ($\beta = .214$, $p = .011$), and Cognitive Familiarity ($\beta = .172$, $p = .024$). These findings fully support Hypothesis 2.

4.6 Qualitative Thematic Synthesis

Thematic analysis of qualitative interviews (n = 12) and two focus group discussions generated three core themes that contextualize the quantitative distributions:

Theme 1: Asynchronous Training Superficiality ('Certificate Chasing')

"We complete online NISHTHA quizzes on our phones to obtain certificates for administrative compliance, but no one provides practical, subject-specific training on how to evaluate collaborative inquiry in crowded classrooms with over 50 students." **Teacher Participant 4, Government Higher Secondary School, Budgam**

Theme 2: High-Altitude Climatic and Infrastructural Vulnerabilities

"During severe winter months, 12-hour load-shedding and severed broadband lines render digital smart classrooms non-functional. When schools reopen in March, the frantic rush to finish the board examination syllabus completely sidelines inquiry-based projects." **Teacher Participant 9, Rural Secondary School, Kulgam**

Theme 3: The Hegemony of Summative Board Examinations

"While NEP 2020 emphasizes Holistic Progress Cards and formative creativity, school performance is evaluated solely by JKBOSE Class 10 pass percentages. Parents and administrators prioritize marks over critical thinking." **Teacher Participant 11, Private High School, Srinagar**

5. Discussion and Critical Synthesis

5.1 The Policy-Praxis Dissonance: The 78% vs. 34% Divide

The central empirical finding of this study is the substantial divergence between cognitive policy awareness and pedagogical enactment. While 78.0% of teachers expressed high familiarity with NEP 2020 constructs, only 34.0% exhibited high pedagogical competence, and only 28.0% demonstrated high technological efficacy. This finding aligns

with Fullan's [7] theory of educational reform, which posits that cognitive endorsement of policy rhetoric rarely translates into classroom transformation without extensive, situated scaffolding.

5.2 Spatial and Institutional Stratification in Schooling

The stark frequency differences across management and locality strata (where 51.8% of government teachers and 51.7% of rural teachers remain in the low technological efficacy tier) reflect deep structural disparities in educational resources [22, 44]. In Kashmir's rural and peripheral areas, teachers face compounding burdens, including multi-grade instruction and non-academic administrative assignments, severely constraining their pedagogical agency [24].

6. Educational Implications

Based on the empirical frequency and regression findings, this study proposes four strategic interventions:

1. Cluster-Based Pedagogical Mentorship: SCERT J&K should transition from top-down online cascade lectures to school-cluster Professional Learning Communities (PLCs) led by designated master teachers.
2. Resilient Offline-First Hybrid EdTech: Equip rural schools with solar-assisted offline digital servers (e.g., Raspberry Pi educational servers) preloaded with PhET simulations and interactive science tools to overcome power and connectivity failures.
3. Examination Reform under JKBOSE: Re-align Class 10 and 12 board examination blueprints to allocate at least 40% weighting to higher-order analytical questions, integrating Holistic Progress Card (HPC) scores into formal matriculation records.
4. Workload Rationalization: Restrict non-academic clerical duties assigned to government teachers to safeguard instructional focus.

7. Conclusion, Limitations, and Future Research

This empirical investigation demonstrates that realizing the vision of NEP 2020 in Kashmir Division requires addressing the fundamental structural and technological gaps that constrain classroom teachers. While cognitive buy-in is high (78.0%), pedagogical (34.0%) and technological (28.0%) readiness require targeted institutional investment. Future research should expand sample coverage longitudinally and evaluate direct classroom observational indicators alongside student learning outcomes.

References

[1] Ministry of Human Resource Development. (2020). National Education Policy 2020. Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

[2] Kumar, K., & Sarangapani, P. M. (2021). Transforming Indian school education: A critical examination of NEP 2020. Economic and Political Weekly, 56(12), 43–50.

[3] Partnership for 21st Century Learning. (2019). Framework for 21st century learning definitions. Battelle for Kids. https://www.battelleforkids.org/networks/p21

[4] Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. Journal of Curriculum Studies, 44(3), 299–321. https://doi.org/10.1080/00220272.2012.708990

[5] Cochran-Smith, M., & Zeichner, K. M. (2020). Studying teacher education: The report of the AERA panel on research and teacher education. Routledge.

[6] Batra, P. (2021). National Education Policy 2020: An agenda for teacher education reform or retrogression? Social Scientist, 49(1-2), 17–34.

[7] Fullan, M. (2021). The new meaning of educational change (6th ed.). Teachers College Press.

[8] Biesta, G. (2022). World-centred education: A view for the present. Routledge. https://doi.org/10.4324/9781003098331

[9] Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. Applied Developmental Science, 24(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

[10] Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. Harvard Educational Review, 57(1), 1–22.

[11] UNESCO. (2021). Reimagining our futures together: A new social contract for education. International Commission on the Futures of Education, UNESCO.

[12] Tilak, J. B. (2021). Universal secondary education in India: Issues, challenges and policy imperatives. Journal of Educational Planning and Administration, 35(3), 205–228.

[13] Dede, C. (2010). Comparing frameworks for 21st century skills. In J. Bellanca & R. Brandt (Eds.), 21st century skills: Rethinking how students learn (pp. 51–76). Solution Tree Press.

[14] Care, E., Kim, H., & Vista, A. (2018). Education system alignment for 21st century skills: Focus on assessment. Center for Universal Education at The Brookings Institution.

[15] UNESCO Asia and Pacific Regional Bureau for Education. (2016). Assessment of transversal competencies: Current policies and practices. UNESCO Bangkok.

[16] OECD. (2019). OECD Future of Education and Skills 2030: Conceptual learning framework. OECD Publishing. https://www.oecd.org/education/2030-project/teaching-and-learning/learning/

[17] Ananiadou, K., & Claro, M. (2009). 21st century skills and competences for new millennium learners in OECD countries (OECD Education Working Papers, No. 41). OECD Publishing. https://doi.org/10.1787/218525261154

[18] Bhat, M. A., & Lone, Z. A. (2023). Educational development in Jammu and Kashmir: Progress, structural gaps, and the road ahead under NEP 2020. Journal of Himalayan Studies, 14(2), 112–129.

[19] Rasool, G., & Wani, N. A. (2022). Digital learning divide in conflict zones: A study of secondary schools in Kashmir. Asian Education and Development Studies, 11(4), 682–698. https://doi.org/10.1108/AEDS-09-2021-0205

[20] Parveen, S., & Yousuf, M. (2021). Instructional loss, mental health, and educational disruptions: Experiences of school teachers in Kashmir Valley. International Journal of Educational Development, 84, 102431. https://doi.org/10.1016/j.ijedudev.2021.102431

[21] State Council of Educational Research and Training [SCERT J&K]. (2023). Annual status report on teacher training and curricular reforms under NEP 2020. Directorate of SCERT, Jammu and Kashmir.

[22] Mir, A. A., & Shah, B. A. (2024). Infrastructure and ICT readiness of government secondary schools in rural Kashmir: An empirical evaluation. Indian Educational Review, 61(1), 45–67.

[23] Ministry of Education. (2023). Unified District Information System for Education Plus (UDISE+) 2022–23 Report. Department of School Education and Literacy, Government of India.

[24] Dar, W. A. (2022). Teacher professional agency amid socio-political transitions: A qualitative study from Kashmir. Teaching and Teacher Education, 118, 103829. https://doi.org/10.1016/j.tate.2022.103829

[25] NCERT. (2021). NISHTHA: National initiative for school heads' and teachers' holistic advancement - Implementation guidelines. National Council of Educational Research and Training.

[26] Qureshi, M. I., & Rather, S. A. (2023). Evaluating the efficacy of online teacher development programmes during COVID-19 and post-pandemic era in J&K. Journal of Teacher Education and Research, 18(2), 89–104.

[27] Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

[28] Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman and Company.

[29] Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2013). A review of technological pedagogical content knowledge. Educational Technology & Society, 16(2), 31–51.

[30] Scherer, R., Tondeur, J., & Siddiq, F. (2017). On the quest for validity: Testing the factor structure and measurement invariance of the TPACK framework. Computers & Education, 112, 1–17. https://doi.org/10.1016/j.compedu.2017.04.012

[31] Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. Teaching and Teacher Education, 17(7), 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

[32] Zee, M., & Koomen, H. M. (2016). Teacher self-efficacy and its effects on classroom processes, student academic characteristics, and teachers' well-being: A synthesis of 40 years of research. Review of Educational Research, 86(4), 981–1015. https://doi.org/10.3102/0034654315626801

[33] Malik, M. A., & Akhtar, R. (2023). High-stakes examination stress and pedagogical inertia among secondary school educators in North India. Journal of Pedagogy and Educational Practice, 12(1), 54–71.

[34] Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective teacher professional development. Learning Policy Institute. https://doi.org/10.54300/122.311

[35] Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., & Hachfeld, A. (2013). Professional competence of teachers: Effects on instructional quality and student development. Journal of Educational Psychology, 105(3), 805–820. https://doi.org/10.1037/a0032583

[36] Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. Educational Researcher, 38(3), 181–199. https://doi.org/10.3102/0013189X08331140

[37] Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. Longman.

[38] Hattie, J. (2012). Visible learning for teachers: Maximizing impact on learning. Routledge. https://doi.org/10.4324/9780203181522

[39] Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. Assessment in Education: Principles, Policy & Practice, 25(6), 551–575. https://doi.org/10.1080/0969594X.2018.1441807

[40] Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology integration in education: A critical review of qualitative evidence. Educational Technology Research and Development, 65(3), 555–575. https://doi.org/10.1007/s11423-016-9481-2

[41] Day, C., & Gu, Q. (2014). Resilient teachers, resilient schools: Building and sustaining quality in testing times. Routledge.

[42] Sleeter, C. E. (2014). Toward teacher education research that informs policy for social justice. Journal of Teacher Education, 65(2), 146–153. https://doi.org/10.1177/0022487113511586

[43] Sharma, R., & Rani, P. (2022). Readiness and challenges in adopting competency-based education under NEP 2020: An empirical study of North Indian teachers. Educational Quest: An International Journal of Education and Applied Social Sciences, 13(3), 187–198.

[44] Kumar, S., & Mohapatra, P. K. (2023). Unpacking the second-order digital divide in secondary schools: ICT pedagogy and teacher capabilities. Contemporary Education Dialogue, 20(2), 215–241. https://doi.org/10.1177/09731849231178201

[45] Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

[46] Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. Qualitative Psychology, 9(1), 3–26. https://doi.org/10.1037/qup0000196