

From Policy to Practice: How School-level Transformation and Organizational Support Shape Teacher Development



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Abstract: Whether an education policy can effectively improve teaching ultimately depends on the interpretation, transformation and support at the school level. To clarify the micro-level mechanism of "policy text - school-level transformation - teacher development" in this process, this study adopts a mixed-methods research design, combines questionnaire surveys and semi-structured interviews, draws on a large-scale regular tracking survey dataset on education quality, and adopts stratified sampling to select 68 public schools, 426 frontline teachers, 68 principals and 136 middle-level managers as samples. The data are analyzed using SPSS 26.0 and NVivo 12. The results show that: the depth of schools' rational interpretation of policies has a significant positive predictive effect on the appropriateness of school-level policy implementation; the transformational leadership of principals and management teams is the core mediating factor for the flexible transformation of policies; four types of organizational support, namely instrumental, teaching-research, emotional and institutional support, can significantly alleviate the occupational burden brought by policy implementation, and improve teachers' acceptance of reform and initiative in professional practice; the moderating effect of two-level leadership runs through the entire path from "implementation" to "empowerment". Heterogeneity tests indicate that in medium-sized schools with complete teaching-research echelons, the coupling between policy transformation effectiveness and teacher development gains is higher. This study also simultaneously compares the governance logic of higher education institutions and extracts common laws across education stages. Based on the above findings, this paper proposes a four-dimensional optimization path: lightweight policy delegation, hierarchical school-level adaptation, long-term organizational empowerment, and regular leadership improvement, providing evidence-based references for the effective implementation of policies and the sustainable development of teacher teams in different education systems.

Keywords: Education public policy; school-level accurate transformation; multi-dimensional organizational support; principal's instructional leadership; teacher professional development; cross-level moderating mechanism

1. Introduction

1.1 Research Background

Globally, large-scale education policies represented by curriculum reform, teaching innovation and evaluation reconstruction have become important public tools for countries to improve education quality[1]. However, policy texts are inherently macro, framework-based and decontextualized, and cannot directly adapt to the differences in student sources, teaching staff and school-running traditions among different schools[2]. As the "last mile" of policy implementation, schools must complete a series of transformations including text interpretation, school-based reconstruction, process refinement and resource coordination. The quality of this transformation chain directly determines whether teachers can truly change their daily practice and achieve professional growth[3].

In fact, there is a long and fragile implementation chain between the top-level design of policy and the transformation of teachers' daily classroom practice. Existing studies have repeatedly revealed a "policy-practice gap": the reason why well-intentioned education reforms fail to achieve expected results is often not the defects of the top-level design itself, but the breaks in multiple micro links such as misunderstanding at the school level, the separation between administrative transmission logic and teaching professional logic, and the lack of continuous organizational support[4][5]. Teachers are the terminal executors of policy implementation. Their cognition, acceptance and practical ability of policies in turn determine the survival of the reform, and the positive development of teachers is inseparable from scientific school-based policy adaptation and systematic organizational resource guarantee[6]. Therefore, in-depth exploration of the complete mechanism of policy interpretation, translation, support and regulation in the school field is not only a cutting-edge issue in academic research, but also an urgent need for educational governance practice.

Based on this, this study focuses on the whole process of policy implementation in the school field, and deeply analyzes the differential impacts of four core links—school-based interpretation, management translation, multi-dimensional organizational support and leadership regulation—on teachers' professional practice and career

development. Meanwhile, this study expands the analytical perspective to the identifiable homologous logic in the governance of higher education institutions, so as to make up for the deficiency of previous studies in cross-education stage comparison and extract a more universal theoretical model.

1.2 Research Questions

This research is carried out around the following five groups of questions:

First, how do schools with different educational foundations rationally interpret universal education reform policies through carriers such as teaching research committees, administrative meetings, and teacher seminars? What systematic differences exist in the cognitive characteristics of such interpretation among different types of schools?

Second, through what overall planning, teaching research and communication mechanisms does the administrative team led by principals and middle-level managers complete the flexible transformation and precise implementation of macro policies into school-based operating rules?

Third, how do organizational supporting factors including endogenous teaching research resources, flexible working hours, tiered professional development, peer mutual assistance, and administrator stationed-class supervision dynamically match the differentiated needs of teachers of different teaching seniorities and teaching stages during the policy implementation cycle?

Fourth, how do differences in school-based policy interpretation and implementation approaches indirectly affect teachers' teaching, research, and independent professional development behaviors through the cross-level moderation of principals' transformational leadership, and then reshape teachers' career growth paths?

Fifth, do the above mechanisms share common laws between basic education schools and higher education institutions? In other words, to what extent is the policy governance logic homologous in these two educational contexts, and what enlightenment can this cross-educational-stage comparison provide for theoretical construction?

2. Literature Review

To construct the analytical framework of this study, this chapter systematically sorts out existing literature from three dimensions: the connotation and hierarchical mechanism of school-based policy transformation, the coupling relationship between

organizational support and teacher development, and the moderating mechanism of principal and management leadership. Based on the review of existing achievements, it clearly identifies four research gaps to be filled, so as to provide a basis for the theoretical model and empirical design of this study.

2.1 School-based Policy Transformation: Definition of Connotation and Hierarchical Mechanism

School-based policy transformation refers to the closed-loop process of policy interpretation, context adaptation, operational refinement and dynamic optimization completed by schools through their internal governance structure, teaching research capacity and administrative coordination ability after macro education policies are delivered to schools [9]. Early studies mostly focused on text deconstruction and regional transmission efficiency, with insufficient attention to differences in school contexts [10]. In recent years, academic attention has gradually shifted to the micro level, and began to emphasize the moderating effect of micro factors such as schools' endogenous culture, principal's leadership style and teachers' willingness to accept on transformation effects [11].

In the interpretation 环节, the accuracy of school-based policy interpretation mainly depends on the completeness of schools' normalized teaching research and judgment mechanism and the policy literacy of the management [12]. Schools with complete teaching research echelons and regular collective discussions can quickly eliminate redundant expressions, grasp core requirements and align them with the actual situation of the school; on the contrary, schools with loose management and weak research and judgment capabilities are prone to one-sided or formalized interpretation, which further leads to distorted implementation and teacher resistance [13]. It is worth noting that studies in higher education also find that policy interpretation in secondary colleges and departments depends on the collaborative judgment of departmental teaching research teams and administrative supervisors, and structural differences in disciplinary echelons also lead to interpretation deviations, which forms a cross-educational-stage consistency with the primary and secondary school level [14].

From a theoretical perspective, the cognitive sense-making framework proposed by Spillane et al. provides an important analytical tool for understanding the school-based transformation of policy. This framework points out that policy implementation is essentially a cognitive process: school actors do not passively receive policy

instructions, but instead actively conduct sense-making of policies based on their existing knowledge structures, professional beliefs and organizational contexts [36]. This theoretical perspective shifts the analytical focus from "whether the policy is implemented faithfully" to "how the policy is understood and translated", providing a key theoretical pivot for this study to focus on school-level rational interpretation and flexible transformation by management.

2.2 Organizational Support and Teacher Development: Coupling Mechanism and Dynamic Matching

Organizational support theory holds that multi-dimensional support in a field can effectively buffer occupational stress, enhance sense of belonging and stimulate intrinsic motivation [15]. The core assumption of this theory is that when organizational members feel valued, cared for and resourced by the organization, they are more inclined to reciprocate with positive work attitudes and professional behaviors, and this mechanism has also been widely verified in the educational field [38]. Focusing on educational contexts, organizational support can be refined into four dimensions: instrumental resources, professional teaching research, emotional humanistic care and institutional guarantee, and their synergistic effect has been confirmed in multiple empirical studies [16]. During the in-depth implementation period of policies, teachers must quickly adapt to new teaching paradigms, reshape evaluation thinking and undertake special teaching research tasks, leading to a significant increase in work load and psychological pressure in the short term. At this time, if schools can provide targeted support, they can buffer negative emotions, reduce resistance costs, and promote the active optimization of professional actions [17].

Heterogeneity research shows that teachers at different career stages have obvious differences in demand preferences: novice teachers have a stronger demand for growth-oriented support such as professional guidance, mentoring pairing and digital resources; backbone teachers have greater need for guarantee-oriented support such as flexible working hours, humanistic care and research supporting facilities; while senior teachers value development-oriented support such as professional discourse power, reform incentives and team leadership [18]. Most existing studies focus on the static effectiveness of single support, and fail to explore the dynamic generation and targeted adaptation of organizational support in combination with the full cycle of policy implementation, and this gap is the starting point of this study. Consistent with the basic

education context, empirical research in the field of higher education also shows that support mechanisms such as scientific research funding allocation, interdisciplinary team empowerment and academic leave can positively promote teachers' research output and teaching improvement, and their coupling logic shares deep homology with that of basic education [19].

2.3 Principal and Management Leadership: Moderating Effects and Theoretical Perspectives

The principal and middle-level administrative team act as a key hub connecting top-level policies, the school-based context, and frontline teachers. Their composite leadership, which integrates administrative coordination, professional guidance, and flexible coordination, serves as an important mediating and moderating variable for the efficient translation of policies and the targeted implementation of organizational support [20]. Existing research distinguishes two leadership paradigms: rigid directive leadership focuses on top-down promotion, which achieves high short-term efficiency but tends to accumulate resistance; flexible transformative leadership emphasizes two-way communication, empowerment, and root tracing, balances reform requirements and development needs, and delivers more prominent long-term effectiveness [21].

On this basis, distributed leadership theory provides a more detailed analytical perspective for understanding the functional division and collaboration between principals and middle-level managers. This theory holds that leadership is not concentrated in a single leader, but is distributed among multiple roles including principals, middle-level managers, and teacher leaders, and is realized collectively through interaction and practice [37]. This perspective helps explain why the principal's transformative leadership focuses on macro overall planning and reform atmosphere building, while middle-level leadership focuses on micro refinement and frontline connection: the two are not a simple hierarchical superposition, but a collaborative mechanism with complementary functions.

At present, most studies still incorporate leadership as a single control variable into the model, failing to deeply analyze the cross-level chain moderation mechanism and quantify its marginal contribution throughout the whole process of "policy interpretation - organizational support - teacher development" [22]. This study integrates principal instructional leadership and middle-level administrative leadership into a two-tier composite leadership and constructs a chain mediated moderation model

to deepen the analysis of the mechanism. Notably, the leadership of deans and department heads in higher education institutions also plays a homologous moderating role in the implementation of education policies and the development of teachers' scientific research. This parallel phenomenon across education stages provides a theoretical basis for the comparative analysis of this study [23].

2.4 Research Gaps and Research Positioning

An overview of existing literature shows that four main gaps remain to be filled. First, the micro pre-implementation link is "black-boxed". Previous studies have mostly focused on the macro effectiveness evaluation of policies, with insufficient attention paid to micro pre-implementation links such as differentiated interpretation at the school level and flexible management translation. In other words, academia lacks a detailed description of the key process of "what exactly happens between a policy entering a school and reaching the classroom". Second, there is a lack of research on the dynamic adaptation of organizational support. Existing studies on organizational support mostly adopt a static perspective to investigate the independent effectiveness of a certain type of support factor, and fail to combine the full cycle of policy implementation — from the cognitive impact in the initial stage of policy introduction, to the practical adjustment in the middle stage, and the integration into routine in the later stage — to investigate how organizational support is dynamically generated, adjusted according to needs, and targeted matched. Third, the detailed quantification of the chain moderation effect of leadership is absent. Most studies incorporate leadership as a single control variable into regression models and fail to construct a cross-level chain mediated moderation model, thus cannot accurately quantify the marginal contribution and link sensitivity of leadership in the whole chain of "interpretation - transformation - support - development". Fourth, there is a division between cross-education-stage studies. Research on policy empowerment in basic education and higher education has long been separated, with lack of theoretical dialogue and experience sharing between the two. This prevents the extraction of general governance rules that transcend a single education stage and limits the theoretical generalizability and practical transfer value of academic research. This study adopts a mixed research paradigm and relies on publicly traceable survey data, aiming to systematically fill the above gaps.

3. Research Design

3.1 Theoretical Model

Based on the literature review, this study constructs a five-dimensional chained model of "policy input - school-based transformation - organizational empowerment - leadership moderation - teacher development". In this model, the independent variable is the accuracy of school-based policy interpretation; the first mediating variable is the management-level school-based policy transformation, and the second mediating variable is the supply level of four-dimensional organizational support; the moderating variable is the two-layer composite leadership of the principal and middle management; the dependent variables are the optimization degree of teachers' professional practice and the comprehensive gain of career growth. Meanwhile, school running scale, school stage type, age distribution of teaching staff and completeness of teaching research teams are controlled to reduce confounding bias.

The construction of this model is based on the following theoretical logic: policy texts do not directly affect teachers' behaviors by themselves. Instead, they reach teachers' daily practice ultimately through three successive links: cognitive interpretation at the school level (school-based interpretation), operational translation at the management level (school-based transformation), and resource supply matching (organizational support). During this process, the two-layer leadership of the principal and middle managers is not an independent variable acting on a single link, but a moderating factor that runs through the entire link. It affects not only the direction and depth of interpretation, but also the method and quality of transformation, as well as the intensity and adaptability of support.

3.2 Research Methods and Tools

An embedded mixed research design is adopted, with quantitative methods as the primary approach and qualitative methods as the supplement. The quantitative instrument is a self-designed "Questionnaire on School-level Transformation of Educational Policy, Organizational Support and Teacher Professional Development", which adopts a five-point Likert scoring system. The scale covers four modules: policy interpretation, management-level transformation, organizational support provision, and teacher development, with embedded observation items for leadership moderation. Specific region-exclusive expressions were excluded during the questionnaire design to ensure potential applicability and replicability across different cultural contexts. The qualitative instrument is a semi-structured interview outline, which is developed around

three themes: pain points in reform implementation, support demands, and leadership perception. Stratified interviews are conducted with principals, middle-level administrators, and teachers from different echelons. The entire interview process is recorded and transcribed to ensure the traceability of data.

3.3 Samples and Data Sources

All quantitative data and qualitative interview materials in this study are from a regular tracking survey project on education quality conducted during 2023 – 2025. This data source is publicly available and compliant educational survey data, which meets the data traceability requirements of international journals. Multidimensional stratified random sampling is adopted, covering schools in different locations including urban areas, suburbs and towns, to ensure the representativeness of the sample. The sample structure is shown in Table 1.

Stratified categories of survey samples	Classification criteria for subdivided echelons	Actual number of samples	Percentage of valid surveys (%)	Source of data compliance traceability
Grassroots public education units	Hierarchical coverage across all school stages, with standardized compliant school-running qualifications	68	100.00	National Basic Education Normalized Tracking Public Database
Frontline full-time serving teachers	Stratified proportioning by teaching seniority: 1-5 years for young	426 participants	97.42	Synchronized tracing with the whole-domain open education operation

	teachers, 6-15 years for backbone teachers, and over 15 years for senior teachers			tracking database
School-level core administrative managers	Specialized stratified selection of principals and vice principals in charge of teaching	68 people	98.53	Open, synchronously match and verify the school running management accounts
Mid-level teaching research administrative cadres	Full coverage of teaching research directors, grade group leaders and administrative supervision commissioners	136 individuals	96.91	Benchmarking and verification against public filing data for school-based research and teaching posts

Table 1 Statistical table of compliant ratio and data traceability of 全域 stratified research samples (N=698)

3.4 Pre-verification of data reliability and validity

Before the formal analysis, a closed-loop test of the scale's reliability and validity was conducted. The Cronbach's α coefficients of all core latent variables are all greater than 0.82, the composite reliability is greater than 0.80, and the average variance extracted is all higher than 0.50, indicating good internal consistency. In terms of validity, after being evaluated by three foreign scholars in the field of international

education governance and two doctoral supervisors of educational management in universities, the content validity index reached 0.94; exploratory factor analysis showed that the KMO value was 0.87, Bartlett's test of sphericity had $p < 0.001$, and all factor loadings exceeded 0.70. The Harman single-factor method was used to test for common method bias, and the variance explained by the first common factor was 31.26%, which is lower than the critical value of 40%, indicating that there is no serious common method bias.

4. Empirical Research

4.1 Descriptive Statistics and Correlation Analysis

The mean values of all core variables range from 2.87 to 4.21, with stable standard deviations and a distribution close to normal distribution. Correlation analysis shows that the accuracy of school-based policy interpretation, the school-level policy transformation effectiveness of the management, and the supply of organizational support are all significantly positively correlated with teachers' professional practice optimization and career growth ($p < 0.001$); two-layer compound leadership is also highly positively correlated with all core variables. Among the control variables, the completeness of the teaching and research echelon has a relatively high correlation with the school running scale, while the basic correlation between school stage type and teaching length is weak, and these variables will be controlled accordingly in the subsequent analysis.

4.2 Main Effect Regression: Direct and Indirect Effects of the Full School-based Transformation Link

The results of hierarchical regression are shown in Table 2. Model 1 only includes school running scale and teaching research echelon, with a model goodness of fit $R^2 = 0.108$; Model 2 introduces the accuracy of school-based policy interpretation, which has a significant positive effect on teacher development ($\beta = 0.417$, $p < 0.001$), and R^2 rises to 0.352; Model 3 adds the mediating variable of school-based policy transformation by the management, which shows that its partial mediating effect is significant ($\beta = 0.362$, $p < 0.001$), and R^2 reaches 0.587; Model 4 further incorporates multi-dimensional organizational support, and the full-link empowerment effect is strengthened ($\beta = 0.295$, $p < 0.001$), with R^2 increasing to 0.714. This indicates that accurate policy interpretation lays a foundation for teacher development, flexible translation by management undertakes top-level requirements and eliminates logical

fragmentation, and organizational support serves as a fundamental guarantee. The collaborative empowerment path of the three factors is clear.

Step of hierarchical regression model	Category of core included variables	Regression coefficient β	Standard error SE	Significance p-value	Model fit R^2
Model 1 (Base control layer)	Control variables for fixed school running scale and completeness of teaching and research echelon	0.124	0.031	$p < 0.01$	0.108
Model 2 (Main Effect Core Layer)	Incorporates the independent variable of the accuracy of school-based policy interpretation	0.417	0.028	$p < 0.001$	0.352
Model 3 (Mediating Empowerment)	Adding the mediating variable of	0.362	0.025	$p < 0.001$	0.587

ent Layer)	flexible school-based transformation by management				
Model 4 (Full-link closed-loop layer)	Simultaneously incorporate multidimensional collaborative variables of organizational support	0.295	0.022	p<0.001	0.714

Table 2 Core results of hierarchical multiple benchmark regression on school-based transformation empowering teacher development (N=426)

Core empirical conclusions from the benchmark regression are as follows: First, the accuracy of school-level policy interpretation significantly and positively empowers teachers' professional development ($\beta=0.417$, $p<0.001$), which indicates that accurate and rational semantic decoding of policy can reduce teachers' cognitive bias in reform from the source and consolidate the foundation for adapting professional practice; Second, the school-based policy transformation of the management team plays a core partial mediating role, effectively connecting top-level policies with front-line practical scenarios and resolving the contradiction between the separation of administrative transmission and teaching professional logic; Third, after the addition of multidimensional organizational support into the mechanism, the effectiveness of full-chain empowerment is further enhanced, which proves that organizational support is a key practical guarantee for policy implementation to empower teacher growth. This finding is consistent with the conclusions of mainstream global empirical research on education

policy [27].

4.3 Chain moderating effect: the cross-level role of dual-layer leadership

Tests using the Bootstrap method with the PROCESS macro (5000 resamples) show that dual-layer composite leadership has a significant moderating effect on the full chain of "interpretation-transformation-support-development" (index of moderated mediation = 0.283, 95% CI [0.12, 0.45], $p < 0.001$), proving that leadership plays a key connecting role in the path of policy interpretation-transformation-support-development. Hierarchical analysis shows that principals' transformational leadership focuses on macro overall coordination, resource guarantee and reform atmosphere building, while middle-level leadership focuses on micro refinement, front-line question answering and hierarchical docking. The interaction of the two not only maintains the rigid bottom line of the policy, but also preserves the flexible space for teachers' development. Supplementary heterogeneity analysis shows that for medium-sized schools with complete teaching and research echelons, the moderating effectiveness of leadership is the optimal; the marginal effectiveness is relatively weak for small-scale disadvantaged schools, so the empowerment mechanism for the management team needs to be directionally strengthened.

4.4 Heterogeneity Analysis of Organizational Support

The enabling effects of the four types of organizational support on different teachers differ significantly: for young teachers within five years of entry, professional teaching research pairing and digital resource support have the strongest effect ($\beta = 0.451$, $p < 0.001$); for backbone teachers with 6 to 15 years of teaching experience, flexible working hours and supporting guarantees for scientific research projects have a more prominent enabling effect ($\beta = 0.386$, $p < 0.001$); for senior teachers with more than 15 years of teaching experience, developmental supports such as discourse power in teaching research and team coordination platforms are the most valuable ($\beta = 0.327$, $p < 0.01$). This heterogeneity result provides clear empirical evidence for hierarchical and precise supply.

5. Research Discussion

This chapter integrates the previously presented analysis of school-based implementation operations, cross-educational-stage governance comparison and theoretical mechanism discussion. First, it summarizes the common operational characteristics and leadership paradigm differences of school-based policy

transformation based on qualitative findings. Then it extends the perspective to higher education and extracts the homologous governance logic across educational stages. Finally, returning to the theoretical level, it conducts a systematic dialogue between all empirical results of this study and existing international research, clarifies the marginal contribution of this study and diagnoses deep-seated governance contradictions.

5.1 Common Characteristics of School-Based Policy Implementation and Comparison of Leadership Paradigms

Based on the three-level coding using NVivo 12, all schools with outstanding policy implementation outcomes have established a regular interpretation mechanism featuring "intensive reading by an administrative working group—hierarchical discussion by all staff—calibration based on student characteristics". The management team first eliminates administrative redundancy and identifies core indicators such as teaching quality improvement and evaluation reform, then collects front-line implementation predictions through hierarchical discussions, and finally fine-tunes the interpretation framework based on the school's own teacher resources and student characteristics, avoiding out-of-context interpretation or perfunctory compliance. In contrast, in schools with weak policy implementation, the policy is generally delivered unilaterally by the management, received passively by teachers, and the interpretation is disconnected from the real teaching context, which further leads to distorted implementation in subsequent steps. This finding confirms the key role of the regular operation of the school-based teaching research committee in improving the accuracy of school-based policy interpretation [12], and also forms a cross-educational-stage correspondence with the finding that secondary departments in higher education rely on the collaborative judgment of departmental teaching research teams [14].

In the management transformation 环节, the qualitative comparison clearly reveals the long-term differences between the two paradigms. Flexible transformative management decomposes the policy into phased teaching research tasks, allocates resources in advance, provides regular in-class question answering and dynamically revises the plan, leading to high teacher acceptance of the reform and active professional adjustment. Rigid command-based management focuses on assessment rather than empowerment, pressing tasks through administrative meetings and pushing progress with quantitative indicators. While account records can be completed in the short term, it triggers passive compliance from teachers in the long run and weakens their endogenous motivation for

growth. This practical picture supports the main effect found in the quantitative results that "management's school-based policy transformation is the core mediator of flexible policy transformation", and also verifies again the irreplaceable long-tail advantage of transformative leadership in balancing the rigid requirements of policies and the flexible development of teachers [17][21].

5.2 Homology of governance logic across educational stages

An important theoretical extension of this study is expanding the analytical perspective from basic education to higher education, so as to test and extract general governance rules that transcend a single educational stage. Through comparison, three levels of common logic can be identified. First, the homology of policy interpretation. Whether in primary and secondary schools or secondary departments in universities, accurate interpretation highly depends on the collaborative judgment of "professional teaching research teams + administrative supervision". Disciplinary structural differences also lead to hierarchical interpretation, and the accuracy of interpretation directly anchors the effectiveness of the entire subsequent chain [32]. Second, the homology of leadership empowerment mechanism. The dual-level leadership of university deans and department heads corresponds fully in function to the principal-middle-level leadership in primary and secondary schools, and both undertake functions such as policy intermediation, resource coordination, group emotional counseling and risk control. Transformative leadership shows a better long-term empowerment effect than command-based leadership at all educational stages [33]. Third, the homology of organizational support effectiveness. The research funding allocation, academic leave and interdisciplinary team empowerment in higher education share the same logic with teaching research resources, flexible working hours and mentor-mentee pairing in basic education in buffering reform load and promoting professional development, and both can effectively alleviate job burnout derived from policy implementation [34]. Meanwhile, the two educational stages also share the same shortcomings: sufficient macro adaptation but insufficient adaptation to micro contexts, sufficient short-term fragmented resource supply but lack of long-term empowerment mechanisms, which provides a theoretical foundation for the cross-educational-stage transfer of the optimization path proposed in this study [35]. This cross-educational-stage homology analysis not only strengthens the theoretical generalizability of the findings of this study, but also lays a foundation for constructing a more integrated theoretical model of

"school-based policy transformation and teacher development".

5.3 Dialogue with existing theories and theoretical contributions

Placing the above findings within the context of international academia for examination, the core conclusions of this study corroborate existing theories at multiple levels. First, the accuracy of school-level policy interpretation positively empowers teacher professional development, which aligns with the general argument that "cognitive decoding is the foundational prerequisite for effectiveness" in micro-level research on policy implementation, and empirically echoes Spillane et al.'s discussion on the importance of "cognitive framework" in policy implementation [36]. Second, the quantitative verification of the chain moderating effect of two-tier compound leadership responds to the academic call for breaking through single-variable analysis and introducing cross-level moderated mediation models. It refines the empowerment boundary and connecting mechanism of the top-down linkage between "principals—middle leaders", and provides quantitative evidence from an East Asian educational context for distributed leadership theory [37]. Third, the revelation of the heterogeneous adaptation law of four-dimensional organizational support complements the theoretical framework of targeted resource supply during the dynamic implementation cycle of policy, and forms intertextuality with research on buffering teacher occupational stress and activating endogenous motivation [38].

In terms of theoretical contribution margin, the core contribution of this study lies in the construction and verification of an integrated chain-mediated moderation model. Specifically, it contributes three reusable analytical tools: first, it constructs a five-dimensional chain theoretical framework of "policy input—school-level transformation—organizational empowerment—leadership moderation—teacher development", bridging the explanatory gap between macro policy design and micro teacher development; second, it extracts governance principles common to all educational stages through cross-stage comparison, breaking the educational stage isolation between policy research on basic education and higher education, and providing a new analytical perspective for comparative education governance; third, it clarifies the differentiated adaptation boundaries across different school scales, teaching research echelons, and teacher career stages, laying an analytical foundation for subsequent "context-sensitive" research on policy implementation.

5.4 Diagnosis of Deep-seated Governance Contradictions

Based on comprehensive quantitative and qualitative results, two cross-context deep-seated contradictions run through the entire process of policy implementation. First, there is sustained tension between the standardized rigid requirements of policies and the personalized flexible context of schools. This contradiction cannot be resolved solely by administrative directives; it must rely on the buffering and connecting role of secondary school-level transformation to translate unified requirements into professional action plans adapted to the specific context of each school. Second, there is a natural deviation between the administrative assessment logic of management and the professional practice logic of teachers. When administrative logic overrides professional logic, policies easily fall into the predicament of "meeting account standards but achieving no substantive improvement". Only by adhering to two-way communication, hierarchical empowerment, and long-term humanistic support can consensus on reform be built, and policy goals be truly transformed into teachers' internal professional actions.

It should be noted that the above contradictions are not unique to a single educational system or cultural context. From an international comparative perspective, regions that adopt a top-down approach to advancing education reform all face, to varying degrees, tension between "standardized policy requirements" and "diversified school realities", as well as the game between "administrative accountability logic" and "professional autonomy logic". For example, although decentralized education systems such as those in the UK and the US grant schools greater autonomy, the phenomenon of "teaching to the test" still emerges under the pressure of performance accountability, which is essentially isomorphic to the contradictions diagnosed in this paper. Therefore, the deep-seated governance contradictions identified in this study have certain cross-context explanatory power, and can provide a reference for critical reflection for policymakers and practitioners in different educational systems. Meanwhile, this diagnosis also suggests that future research on school-level policy transformation should incorporate the tension among "institutional environment—school organization—teacher agency" into a unified analytical framework, so as to more systematically explain why similar policies present vastly different implementation effects across different institutional environments.

6. Practical Recommendations and Optimization Pathways

Based on the aforementioned empirical findings and theoretical discussions, this

chapter proposes a systematic optimization pathway across four dimensions: policy formulation, school-level transformation, organizational support, and leadership development. It should be emphasized that these four pathways are not isolated operational recommendations, but an inter-nested collaborative system: lightweight policy design creates space for school-level transformation, flexible school-based adaptation clarifies the direction for organizational support, targeted organizational support injects momentum into teacher development, and the pervasive leadership serves as the operational hub of this closed-loop system.

6.1 Lightweight Policy 下沉 and Construction of a School-Friendly Policy Framework

Empirical results show that the clarity and interpretability of policy texts directly anchor the efficacy of the entire subsequent implementation chain ($\beta = 0.417$, $p < 0.001$). Therefore, the starting point of optimization should lie at the policy formulation end. Policymakers should fundamentally change the inertial thinking of "implementing documents through documents", and shift the focus of policy design from "procedural compliance" to "practical applicability".

Specifically, three measures can be adopted. First, streamline the structure of policy texts. Remove excessive documentation requirements and redundant procedural statements, and focus policy documents on three to five quantifiable and observable core teaching improvement indicators, enabling schools to quickly identify the focus of reform within limited policy content. Second, develop multilingual school-based interpretation guidelines as supporting materials. Considering the differences in schools' ability to decode policy texts across different linguistic and cultural contexts, a simplified practical interpretation manual can be released simultaneously, which lowers the threshold for policy decoding through case descriptions, frequently asked questions, and contextualized implementation examples. Third, establish a "pre-interpretation" feedback mechanism for policies. Before the official release of a policy, select different types of schools to conduct pilot interpretation, collect feedback on understanding from frontline managers and teachers, and adjust policy wording accordingly to reduce comprehension bias from the source. This recommendation is highly consistent with the concept of "implementation-friendly policy design" advocated by international academia.

6.2 Flexible Hierarchical Adaptation to Promote Differentiated School-Based

Transformation

Heterogeneity analysis has revealed that schools with moderate scale and complete teaching and research teams have the optimal transformation efficiency, while small disadvantaged schools face significant bottlenecks. This indicates that a uniform implementation model is not only inefficient, but may also exacerbate inter-school disparities. Therefore, a hierarchical transformation mechanism of "one policy per school" should be established to fully respect the differences in schools' organizational contexts.

The construction of this mechanism can be carried out from three levels. First, implement targeted policies by school category. For schools with moderate scale and mature teaching and research teams, high-level teaching-research linkage and interdisciplinary collaboration can be advanced in depth, to give full play to the radiating effect of teaching and research leadership; small disadvantaged schools should prioritize the allocation of basic teaching resources, streamline implementation steps, and concentrate limited energy on one or two key improvements; schools with mixed resource endowments or located in urban-rural transition zones must take into account differentiated student learning conditions, and establish a teaching-research connection platform spanning grades and educational stages, to avoid superficial implementation of various reforms caused by scattered resources. Second, generate school-based transformation plans independently. Based on the special policy interpretation team, schools should independently formulate school-based implementation plans in combination with their own teacher structure, student source characteristics and school-running traditions, rather than simply applying the unified template issued by superior authorities. Third, establish a dynamic adjustment mechanism for school-based transformation. Policy implementation is a process of continuous adjustment rather than one-time completion. Schools should regularly review and fine-tune their implementation plans (for example, once per semester), and promptly incorporate practical feedback from front-line teachers.

6.3 Constructing the "Four-Dimensional Integrated" Long-Term Organizational Empowerment Mechanism

Empirical data show that the collaborative provision of multi-dimensional organizational support can increase the explanatory power of the model from 58.7% to 71.4% ($\Delta R^2=0.127$). This fully demonstrates that organizational support is by no

means an optional auxiliary element, but a key practical starting point for policy implementation and empowering teacher growth. However, qualitative interviews also reveal that the current organizational support in many schools has prominent problems such as fragmentation, short-term orientation, and "one-size-fits-all". To address this, this study proposes a "four-dimensional integrated" long-term empowerment mechanism, which integrates instrumental support, teaching-research support, emotional support, and institutional support into a normalized operation system.

The operational key points of this mechanism are as follows. First, hierarchical supply. Targeted matching is carried out according to teachers' career stages: for young teachers within five years of entry, focus on providing growth-oriented support such as teaching research mentors, digital resource banks, and new teacher training workshops (in this study, the β coefficient of this group for teaching research pairing reaches 0.451); for backbone teachers with 6 to 15 years of teaching experience, priority should be given to implementing guarantee-oriented support such as flexible working hours, burden reduction care, and supporting funds for small and micro research projects ($\beta = 0.386$); for senior teachers with more than 15 years of teaching experience, development-oriented support such as open discourse power in teaching research, inter-school demonstration platforms, and team coordination positions should be provided ($\beta = 0.327$). Second, dynamic investigation and assessment. A monthly investigation ledger of teachers' professional load and psychological status is established to real-time monitor the peak pressure at each stage of policy implementation, and dynamically adjust support strategies accordingly. For example, increase professional guidance in the initial stage of policy introduction, focus on emotional counseling in the deepening promotion stage, and turn to institutional solidification in the normal integration stage. Third, coordinated resources. Break down resource barriers between inside and outside the school, and integrate multiple resources such as school-based teaching research funds, regional training platforms, and on-site guidance from university experts into a unified organizational support pool, so as to avoid the fragmented resource dilemma of "multiple supply and fragmented governance".

6.4 Consolidate the two-layer leadership regulatory hub and promote regular leadership training

The chain moderation effect test of this study shows that the two-layer composite leadership of principals and middle managers runs through the whole chain of policy

implementation (moderated mediation index=0.283, $p<0.001$), and it is a key hub connecting institutional design and daily practice. Qualitative coding also reveals that flexible transformational leadership is significantly better than rigid directive leadership in activating teachers' initiative. However, at present, the leadership of many school managers still remains at the level driven by administrative instructions, and lacks a systematic path for transformation. Therefore, it is urgent to shift leadership improvement from individual consciousness to institutionalized cultivation.

The specific path covers four aspects. First, institutionalize hierarchical leadership training. Regular special training for principals' transformational leadership is carried out, covering modules such as policy interpretation methods, two-way communication skills, resource coordination strategies and teacher emotional counseling; at the same time, administrative coordination training for middle managers is carried out, focusing on practical abilities such as task decomposition, in-class guidance, and cross-departmental coordination. Second, build an inter-school leadership exchange platform. Through regional principal forums, inter-school middle manager mutual visits, co-construction of leadership case banks and other forms, promote the horizontal diffusion of flexible management practice experience, and in particular, encourage schools with outstanding transformation effects to export replicable management experience to weak schools. Third, solidify the sinking and in-class residence of management as a regular institution. Principals arrange a fixed half day per week and middle managers arrange a fixed full day per week to enter the classroom, directly observe the practice of policy implementation, conduct face-to-face feedback and communication with teachers, and obtain information on implementation blockages from the source. Fourth, reform the management assessment orientation. Indicators reflecting the effectiveness of flexible empowerment, such as "teachers' professional sense of gain", "actual performance of teaching improvement", and "organizational support satisfaction", are included in the management assessment system, fundamentally reversing the administrative inertia of "valuing ledgers over actual effects".

7. Conclusion

Through mixed empirical analysis, this study draws the following core conclusions: schools' rational interpretation of policies is a fundamental link for policy implementation and positive empowerment of teacher development, and the accuracy of school-based policy interpretation directly determines the effectiveness of

subsequent transformation; the transformational leadership with collaboration between principals and middle-level leaders is the hub to resolve the separation between administrative and teaching logics and realize the flexible implementation of macro policies; the four-dimensional hierarchical organizational support mechanism can accurately alleviate reform burdens, differentially adapt to the growth needs of teachers across the entire echelon, and effectively stimulate teachers' initiative; the chain moderating effect of two-tier composite leadership runs through the whole process of policy implementation, and schools with moderate scale and complete teaching research echelons have the optimal coupling effect.

Based on the above findings, this study forms three marginal contributions at the theoretical and methodological levels. First, it constructs and tests the five-dimensional chain model of "policy input — school-based transformation — organizational empowerment — leadership regulation — teacher development", and integrates variables scattered in different research veins into a unified explanatory framework. Second, through cross-education-stage comparison, it extracts the homologous governance laws of basic education and higher education, providing an empirical basis for breaking the barriers between education stages and constructing a more integrated theory of policy implementation. Third, it adopts a quantitative-led mixed research design, which not only retains the advantages of large-sample statistical inference, but also reveals mechanism details through qualitative coding, providing a methodological reference for subsequent similar studies. The above laws show homology in the comparative analysis of basic education and higher education in this study, revealing a theoretical model of policy implementation and teacher development that can be referenced and reused by different education stages and even different education systems. Based on compliant empirical data and in line with international academic norms, the full text can provide reliable evidence-based support for different education systems to improve the quality of policy implementation and promote the professional development of teachers.

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