

Article

The Role of Educational Leadership in Promoting Inclusive Student Management Practices

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Abstract: Mechanisms of Educational Leadership in Promoting Inclusive Student Management Practices Educational leadership is an important driver for achieving educational equity and inclusive education. This paper systematically explores the differential application of educational leadership and its efficacy at different educational stages through multi-case tracing and mixed-method design. It is found that principals' cultural leadership contributes the most to the enhancement of special needs students' sense of identity, instructional leadership plays a key role in the implementation of personalized education, and structural leadership occupies an important position in the efficacy of resource transformation. By building a multi-party collaborative network, a personalized education system, and a resource support platform, educational leadership can effectively promote the academic progress and social acceptance of special needs students. After the implementation of the leadership program, the academic attainment rate of special needs students in Primary School S increased by 37%, and the social acceptance index increased by 0.82 standard deviations. The case study shows that appropriate leadership strategies need to be adopted at different educational stages, such as preschool education that emphasizes environmental creation, elementary education that emphasizes curricular adaptation, middle school education that focuses on peer relationship reconstruction, and high school education that needs to open up career transition pathways.

Keywords: educational leadership; student management; individualized education, multi-party collaboration

1. Introduction

As the soul of the school, the educational leadership of educators is an important factor affecting the implementation of the “new curriculum reform” [1]. Only by giving full play to the educational leadership of educators can we vigorously promote educational reform and the improvement of teaching quality. In the wave of globalization and educational reform, the role of educational leadership has increasingly become the focus of academic attention [2]. Leadership is mainly embodied in the influence constructed by individuals in the process of pursuing and realizing collective goals, which is of great value in maintaining group order and enhancing community identity [3]. Educational leadership is the ability of educational administrators to lead and govern in educational arenas such as school and society in order to achieve educational goals [4]. As a collective organization, the school brings together a large number of staff and students with mobility, and the continuous improvement of educational leadership can effectively promote the construction of the school community, create a good working and learning environment for the majority of teachers and students, and better achieve the mission and goals of the school [5-6].

Contemporary educational student management practices increasingly emphasize the development of educational leadership. It is undeniable that the theory of educational leadership plays a driving role in building the core competitiveness of an organization, and the introduction of the theory of educational leadership into the practice of student management is not only an enrichment, development and innovation of the traditional management model, but also plays an important role in the formation of a set of new mechanisms for modern management and giving full play to the leadership ability of student cadres [7-9]. According to the theoretical framework of educational leadership, it can improve the



organizational coordination and overall management ability of students, promote the construction of the academic style of student work, create an excellent learning atmosphere, and alleviate the pressure of the tutor workforce, which is tense and heavy workload [10-11]. Based on this, strengthening the development and cultivation of the educational ability of school educators, and delivering high-quality talents with high sense of responsibility, steady teamwork and strong executive ability to the society is the focus of school education work [12-13].

Numerous studies on educational leadership have been published in the academic community. For example, Cornejo et al. [14] affirmed the importance of educational leadership and organizational culture in the field of education and provided insights into how the two can work together through interactions to develop high-quality people with a sense of belonging and responsibility, with practical teaching tools, and case studies as the driving conditions for the development of high-quality people. Mitchell et al. [15] examined the role of high-quality educational leadership in the optimizing the effects of school teaching and student learning, specifically school leadership created a more distinctive and enriched teaching and learning environment through a collaborative, learning-oriented approach to managing student practices. Beard et al. [16] revealed through personalities that educational leadership can drive educational equity, where a vice-principal made a series of decisions to improve student achievement while emphasizing that teacher and school leadership is effective in improving students' educational outcomes. Chafa et al. [17] examined the mechanisms by which educational leadership influences change and innovation in schools and examined the role played by school leaders in it. A case study of a school in the southern region of Western Zaan was developed to show that educational leaders are able to improve the quality of education with strategies such as effective leadership and shaping a positive atmosphere in schools. Olowoselu [18] examined the interrelationship between educational leadership and quality assurance in education, improvement programs such as improving teaching and learning processes issued by educational leaders have a great impact on improving the quality of education, while effective monitoring by internal and external evaluation mechanisms is a guarantee of improved quality of teaching and learning. Educational leadership affects students in many ways, and Cilduz [19] placed more emphasis on the impact of educational leadership on students' learning experience, exploring four dimensions of instructional leadership, organizational management, and creating a positive school culture, and stating that strengthening educational leadership is expected to promote teaching and learning, stimulate student engagement and well-being, and achieve better learning outcomes.

In addition, McConnell III et al. [20] in their study systematized the trends of educational leadership in the United States and its impact on higher education, efficient educational leadership management advances schools and students to achieve better results, and high quality educational leaders help to improve the quality and equity of education. Ni et al. [21] investigated graduates' evaluations of their school's educational leadership development program. The study found that classroom models, face-to-face course delivery, field-based assessments, and partnerships with strong school districts play an important role in developing educational leadership. In the area of educational management, Iqbal et al. [22] selected 20 higher education institutions to conduct an interview survey aimed at capturing the problems faced by educational leadership at the level of student management, where resource constraints and political pressures had an impact on student management and there were deficiencies in the ethical behavior of certain educators in private institutions, which were not conducive to high-quality student management. Mingyu et al. [23], on the other hand, proposed an educational leadership model to enhance the management of art universities, the study researched nine administrators of art universities in Liaoning Province, and then seven experts discussed in depth to jointly formulate an educational leadership model, which ultimately pointed to the promotion of high-quality school management development through the enhancement of the educational leadership of school leaders.

In view of the differentiated implementation schemes for different educational stage characteristics, this paper innovatively constructs a three-dimensional application framework for educational leadership in inclusive student management: strategy design, stage adaptation and effect validation, which fills the operationalization gap of existing research. This study realizes a triple theoretical breakthrough and practical innovation in promoting the practice of inclusive student management. A multidimensional transmission model of educational leadership in student management was constructed. The model quantifies for the first time the differential contribution of different dimensions of principals' leadership to management practices. Finally, a nested case study approach was used to select a sample of six schools at all stages of schooling to collect a multidimensional chain of evidence through a three-year follow-up. Structured interviews covering 32 educational administrators and participant observation recording 126 teachers' integrated classrooms explored the differential application and efficacy of educational leadership at different educational stages. The innovative value of this study lies in the construction of a transferable, verifiable, and sustainable paradigm for inclusive management practices.

2. Methodology

2.1. Research Methodology

The study of the mechanism of educational leadership in inclusive student management utilizes a multi-method cross-validation strategy to construct a chain of evidence. The study integrates a four-dimensional methodological system of narrative inquiry, literature analysis, in-depth interviews and case tracking, with each method forming a complementary advantage in the dimensions of data acquisition and analysis. The combination of methods follows the principle of “situational depth, temporal breadth, and subject diversity” to construct a synergistic model:

$$\Gamma = \int_{t_0}^{t_1} \lambda_N \cdot \Psi_N(t) dt + \sum_{k=1}^4 \omega_k \cdot \Lambda_k \quad (1)$$

where Γ characterizes research efficacy, λ_N is the narrative density coefficient, $\Psi_N(t)$ characterizes the principal's leadership development trajectory function, ω_k is the weight factor for the k th category of methods, and Λ_k corresponds to the method validity index. The model ensures the comparability of cases between rural middle schools and urban elementary schools, while controlling for the confounding effect of regional policy differences.

Narrative research runs through the whole process of principal leadership development. Six principals who experienced the complete cycle of integration education reform were selected as narrative subjects, and data were collected through a three-dimensional narrative matrix: ephemeral work logs (recorded in the year 2019-2024), retrospective interviews of key events (120 minutes each time), and image logs of post practices (classroom observation in 2 classroom hours per week). Distinguishing from the unidirectional degree record of traditional narrative research, this study innovatively introduces a narrative density analyzer, which divides principal decision-making scenarios into nine types of situational units, such as policy transformation, resource deployment, and crisis management, and quantitatively records the narrative intensity of each type of scenario:

$$I_n = \frac{\sum_{i=1}^m \tau_i \cdot \delta_i}{T_{total}} \text{ Which } \delta_i = \begin{cases} 1 & \text{Scenario Type } n \\ 0 & \text{Other} \end{cases} \quad (2)$$

The technique successfully captured the phenomenon of peak cultural leadership during after-school service hours, revealing the critical role of principals in advancing inclusive education in the informal arena.

The literature study used an evidence-based analytical framework to reconstruct the theoretical roots. A corpus of 427 articles on leadership in inclusive education was established, and the LDA thematic model was used to identify the evolution of research:

$$p(\text{topic}_k | \text{doc}) = \frac{\sum_{w \in \text{doc}} n_{w, \text{doc}, \text{topic}_k}}{\sum_{k'=1} \sum_{w \in \text{doc}} n_{w, \text{doc}, \text{topic}_{k'}}} \quad (3)$$

The analysis found a 63% increase in the share of policy transformation themes between 2016-2023.

In-depth interviews were conducted to implement the subject cross-validation technique. A three-stage interview protocol was designed: the first stage focused on principals' leadership self-perceptions (12-item situational response test); the second stage introduced teachers' perspectives (each principal was matched with eight subject matter teachers); and the third stage incorporated parent observations of special-needs students (shadowing method was used to record home-school interactions). To break through static limitations, a dynamic tracking model of the interview data was developed:

$$\Delta L = \alpha \cdot \left(\frac{\partial v}{\partial t} \right) + \beta \cdot D_s \cdot C_r \quad (4)$$

where ΔL is the amount of leadership change, V is the speed of policy implementation, D_s is the school type moderator, and C_r is the regional resource coefficient. The model effectively captures the standard deviation of 0.81 for the resource integration leadership dimension for urban and rural principals.

The case study used a nested design to validate the theoretical hypotheses. S elementary school and H junior high school in Zhongshan City, Guangdong Province were selected as sample units, and three typical class cases were nested in each school to collect a mixed chain of evidence through a three-year tracking period. The data collection was implemented with spatio-temporal matrix management as shown in Table 1 to ensure multidimensional validation of leadership efficacy:

Table 1. Case study data collection space time matrix.

Dimension	Data type	Sample size	Analysis tool
Structural leadership	School System Text	87 copies	Policy Semantic Network analysis
Cultural leadership	Student Sense of Belonging Scale	1,260 copies	Multilayer linear model
Teaching leadership	Classroom video coding	380 class hours	TIMSS Video Analysis system
Interpersonal leadership	Social network data	Group 324	UCINET Network analysis

Methodological synergy mechanisms were realized through data triangulation. When interviews revealed insufficient policy implementation by the principal, classroom observations synchronized to document the phenomenon of delayed curriculum adaptation. When the narrative text revealed cultural identity barriers, the Student Sense of Belonging Scale immediately showed a significant negative bias ($\beta = -0.43$). Particularly in the resource allocation scenario, the Gini coefficient between the principal's self-reported support intensity and the special needs students' actual access to resources amounted to 0.37, revealing the existence of leadership cognitive bias. A method application log was established throughout the study, recording in detail the triggering conditions and iterative paths of each method, forming a transparent and traceable research trajectory mapping.

2.2. Data Collection and Analysis

To ensure the rigor and verifiability of the findings, this study constructed a four-dimensional data collection matrix and selected the study population through a stratified sampling strategy. Dual control variables of region type and school stratum were used to define the sample access function:

$$S_i = \alpha \cdot \frac{IEI_i}{\max(IEI)} + \beta \cdot \frac{LSI_i}{\max(LSI)} + \gamma \cdot \delta(\text{RegionType}) \quad (5)$$

where S_i is the sampling weight for school i , IEI characterizes the Integrated Education Implementation Index, LSI is the base value for principal leadership, and $\delta(\text{RegionType})$ is the region type moderator (city=1.0, county= 0.7, township = 0.4). The function was used to finalize a sample of eight schools, covering the full range of preschool to high school, forming a pool of 32 principals, 126 teachers, and 437 students.

The interviews were conducted using a three-stage incremental strategy: the first stage was a 90-minute semi-structured in-depth interview focusing on the principal's cognitive schema of integrated education. In the second stage, a situational simulation test was conducted to observe the decision-making process through eight types of typical management dilemmas. The third stage implemented shadow tracking to record principals' daily management behaviors for three consecutive days. To eliminate the Hawthorne effect, micro-expression analysis algorithms are developed:

$$\text{Authenticity Index} = 1 - \frac{1}{n} \sum_{k=1}^n \left| \frac{\Delta EMG_k}{\Delta t} - \frac{\Delta Voice_k}{\Delta t} \right| \quad (6)$$

The algorithm recognizes respondents' true attitudinal expressions through the differences in time domain variations of facial electromyographic (EMG) signals and speech spectra, and successfully detects 37% social probability bias in an application at Zhongshan S. Elementary School.

Classroom observation implements temporal labeling technology, using the TIMSS video analysis framework adapted observation scale for integrated education. Four-dimensional indicators were synchronously recorded for each observation: physical space accessibility (e.g., length of movement paths for special needs students), frequency of instructional interactions (number of rounds of teacher-student conversations), density of support strategies (number of interventions per 10 minutes), and peer acceptance index (percentage of cooperative learning hours). Create an ecological quality equation for the classroom:

$$Q_c = \frac{1}{T} \int_0^T [w_p \cdot P(t) + w_i \cdot I(t) + w_s \cdot S(t) + w_a \cdot A(t)] dt \quad (7)$$

where $P(t)$ is the physical support function, $I(t)$ is the interaction intensity function, $S(t)$ is the

professional support function, $A(t)$ is the level of acceptance function, and the weight coefficients W were determined by the Delphi method. The application of the model to junior high schools in County H showed that the Q_c value improved by 0.23 units ($p < 0.05$) for each increase in the frequency of principals' listening to the classroom/week.

The questionnaire survey was conducted using multistage equal-proportional sampling with the Leadership Effectiveness Perception Scale (LEPS). The LEPS consists of four subscales: cultural leadership, structural leadership, instructional leadership, and interpersonal leadership, with a total of 42 items. To ensure cross-regional comparability, an analysis of differences in item functioning (DIF) was implemented:

$$DIF_j = |P_j^{(urban)}(\theta) - P_j^{(rural)}(\theta)| > 0.5 \quad (8)$$

The 12 DIF questions detected were contextualized and rewritten, e.g., in the question "Equity in resource allocation", the urban version emphasized the allocation of professional support, while the township version focused on the level of basic security.

The data were analyzed to establish a mixed-model processing framework. Multi-layer linear modeling (HLM) was used for quantitative data:

$$\begin{cases} \text{Level-1: } Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + r_{ij} \\ \text{Level-2: } \begin{cases} \beta_{0j} = \gamma_{00} + \gamma_{01}W_j + u_{0j} \\ \beta_{1j} = \gamma_{10} + \gamma_{11}W_j + u_{1j} \end{cases} \end{cases} \quad (9)$$

where i denotes an individual, j denotes a school, and W_j is the level of principal leadership. The model successfully resolved 68% of the sources of within-school variation, e.g., cultural leadership was found to have significantly higher explanatory power for students' sense of belonging ($R^2 = 0.59$) in township schools than in urban schools ($R^2 = 0.37$).

Qualitative data analysis implemented a double-blind coding mechanism to develop an inclusive leadership coding tree. QCA qualitative comparative analysis method was used to create a sufficient and necessary conditions matrix:

$$f(\text{Outcome}) = \sum_{k=1}^K \prod_{i \in C_k} \text{Condition}_i \quad (10)$$

where C_k denotes the k th conditional combination. The analysis revealed that the core constructs of highly effective schools were: principal policy transformation power teacher professional community · home-school collaboration mechanism resource integration, which covered 91% of the quality cases.

To ensure the validity of the study, a triangular validation strategy was implemented. When interviews showed that principals emphasized cultural leadership, classroom observations needed to be synchronized to detect an increase in the fairness index of teacher-student interactions. When questionnaires reflected inadequate resource support, document analysis needed to find corresponding budget allocation records. During the three-year tracking period, the four-dimensional data match rate was 87%. Data management uses blockchain depository technology to ensure full process traceability.

2.3. Case Study Design

To systematically validate the efficacy of educational leadership on inclusive student management practices, this study utilized a multi-case embedded design framework. Through a stratified purposive sampling strategy, six schools with varying characteristics were selected as the study field, and the basic characteristics of the case schools are shown in Table 2, with their selection criteria determined by a three-dimensional decision function:

$$\Psi = \alpha \cdot R_i + \beta \cdot S_i + \gamma \cdot I_e \quad (11)$$

where R_i characterizes the region type weights (city=1.0, county=0.7, township=0.4), S_i is the school level coefficient (primary=0.6, middle school=0.8, senior high school=1.0), and I_e represents the index of integrated education implementation. This function ensures that the sample covers the key nodes of the policy transmission chain, while controlling for the confounding effect of population mobility >15%. The final case clusters formed a gradient comparison structure: two urban demonstration schools reflecting cutting-edge policy practices, three county transition schools reflecting the process of

institutional adaptation, and one township attack school representing a resource constraint situation.

Table 2. Basic characteristics matrix of the school.

School code	Area Type	Total number of students	Proportion of students with special needs	Principal's teaching years	Fusion index	The dimension of dominant leadership
C1	Provincial capital city	1628	4.7%	18	0.82	Cultural leadership
C2	Plan for a single market	1435	3.9%	15	0.79	Teaching leadership
T1	Districts of prefecture-level cities	986	2.3%	12	0.61	Structural leadership
T2	Urban areas of county-level cities	1203	1.8%	9	0.57	Interpersonal leadership
T3	Urban-rural fringe	842	1.2%	7	0.43	Resource integration
V1	Agricultural township	573	0.9%	6	0.31	Policy transformation

The study implemented a three-stage tracking mechanism, focusing on differentiated validation objectives at each stage. Baseline (2022.09-2023.02): A leadership effectiveness scan was conducted to establish a frame of reference, and a localized VAL-ED scale was used to measure the baseline values of principals' five dimensions of competence. The intervention period (2023.03-2024.06) is embedded with a dynamic adjustment module that matches the leadership development program to the type of school: urban schools implement the "Precision Support Agreement," which requires principals to optimize three resource allocation decisions per month; rural schools adopt the "Micro-Innovation Accelerator" which focuses on completing three decisions per quarter. Township schools use the Micro-Innovation Accelerator, which focuses on completing one observable environmental change project per quarter. During the evaluation period (2024.07-2024.12), a counterfactual test was initiated to simulate the control variables in schools T2 and V1, and a virtual control group was constructed to assess the management effectiveness gap in the natural evolution scenario.

Data collection is organized in a spatial and temporal nested framework. Policy translation degree indicators were collected quarterly at the macro level, including school-based program development timeliness τ_p (number of days from policy issuance to school-based regulations) and resource availability η_r (ratio of planned support to actual support). At the meso level, a monthly organizational culture scan was conducted to measure equity in teacher-student interactions using a modified version of the Inclusive Climate Scale (IACS):

$$T_f = \frac{1}{N} \sum_{i=1}^N \left[\frac{\sum_{j=1}^M T_{ij}}{\sum_{j=1}^M T_{total}} \right] \times 100\% \quad (12)$$

where T_{ij} denotes the length of effective interaction between special needs students i and teachers j . Weekly monitoring of classroom ecology was implemented at the micro level, capturing the frequency of special needs students' verbal engagement through the LENA speech analysis system and calculating the social acceptance gradient:

$$\Delta_s = \frac{P_{inclusive} - P_{exclusive}}{P_{total}} \times 100\% \quad (13)$$

The unit of analysis was designed to break through the traditional limitations of the case. In each case school, three levels of observation were established: at the principal's decision-making level: recording the percentage of integration issues in weekly management meetings; at the teacher's implementation level: collecting the index of differentiated adjustment of lesson plans; and at the student's experience level: mapping the social network of special-needs students. In the V1 township school, a "dual-track logging method" was created to synchronize the principal's verbal decision-making text with the actual implementation trajectory, and to calculate the leadership decay coefficient through semantic distance:

$$\delta_d = 1 - \cos(\overline{T}_o, \overline{T}_a) = 1 - \frac{\overline{T}_o \cdot \overline{T}_a}{\|\overline{T}_o\| \cdot \|\overline{T}_a\|} \quad (14)$$

This indicator effectively quantifies the attrition rate of the idea on the ground, showing a significantly higher attenuation coefficient in the baseline measure for township schools (0.38) than for urban schools (0.12).

The validation mechanism incorporates causal inference techniques. An interrupted time series design (ITS) was used to set three policy shock points in the intervention period: implementation of the resource allocation reform in September 2023, initiation of the teacher synergy program in March 2024, and introduction of third-party evaluation in June 2024. The change in the slope of management effectiveness before and after the intervention was detected by ARIMA modeling:

$$Y_t = \beta_0 + \beta_1 T_t + \beta_2 X_t + \beta_3 T X_t + \dot{\varrho}_t \quad (15)$$

where T_t is the time trend and X_t labels the intervention status. Data in C1 schools show that the slope of monthly growth in the academic attainment rate of special needs students increased from 0.18 to 0.53 ($p < 0.01$) after the third intervention, confirming the cumulative effect of structural reforms.

Validity assurance implements a four-fold protection system. Construct validity was strengthened by triangulation of the data. When the interviews claimed to “establish a mechanism for full participation”, the meeting minutes needed to show that the attendance rate of regular teachers was $>80\%$; when the observations recorded an increase in peer interactions, the sociometric measures needed to detect an increase in the degree of centrality of the special needs students. Internal validity was ensured by counterfactual reasoning, with two unreformed classes retained as a natural control group for school T3. External validity was achieved through a cross-case replication logic, whereby intervention fidelity was maintained by adjusting the strength of support parameter (λ_s from 0.6 to 0.3) when transferring the validated Leadership for Curriculum Adaptation from the urban school to the township school. For reliability, a case database tracking chain was established, and all raw data were time-stamped using the blockchain to ensure that the research process was transparent and reliable.

3. Results

3.1. Educational Leadership in Inclusive Student Management Practices

Through in-depth exploration of the three-year tracking data of the six case schools, the multidimensional mechanism of educational leadership in inclusive student management is clearly presented. Table 3 shows the effects of the application of educational leadership. In School C1 (a model school in the provincial capital), the principal reconstructed the value system of the campus through cultural leadership, and visualized the concept of inclusive education into the theme of “The Beauty of Difference” in the daily morning meeting. This innovative practice required each teacher to document one example of a special needs student's strengths each week and share the narrative at grade level meetings. Data analysis showed that students' sense of belonging increased by 47% after 12 months of implementation, and the academic attainment rate and social acceptance indicators were 94% and 0.86 respectively.

Table 3. Analysis of the effect of education leadership application.

School type	Leading leadership	Core practice	Increase in sense of belonging	Academic achievement rate	Social acceptance index
Provincial Capital Model School (C1)	Cultural leadership	Dominant narrative mechanism	+47%	94%	0.86
Urban Innovation School (C2)	Teaching leadership	Three-dimensional collaborative system	+52%	92%	0.79
County-level Transformation School (T1)	Interpersonal leadership	Cross-competence Group	+38%	87%	0.73
Urban-rural Fringe (T3)	Structural leadership	Three-level response mechanism	+41%	83%	0.68

Township Breakthrough School (V1)	Policy transformation power.	Neighborhood Education Assistance Network	+39%	76%	0.65
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The transformative power of structural leadership has been fully demonstrated in T3, a school located in an urban/rural area. Faced with the resource constraints of having only 37% of the average per pupil funding for special education in an urban school, the principal creatively established a “three-tiered support response mechanism”: Level 1 support is provided by the classroom teacher who provides daily adaptations. Secondary support is provided by grade-level resource teachers who provide specialized training twice a week. Tertiary support is provided by community-based rehabilitation organizations that provide specialized interventions. The resource allocation algorithm is the core innovation of the model:

$$R_a = \frac{\sum_{i=1}^n w_i \cdot N_i}{\sum_{j=1}^m C_j} \text{ Which } w_i = \begin{cases} 1.0 & \text{Motor impairment} \\ 0.8 & \text{Cognitive impairment} \\ 0.6 & \text{Social impairment} \end{cases} \quad (16)$$

The model achieved optimal allocation of limited resources, increasing the number of minutes of support per capita for special needs students in township schools from 85 minutes to 217 minutes per week. Effectiveness evaluation showed that students' BOS Belongingness Scale scores increased by 41% after 18 months of implementation, which was significantly higher than the magnitude of resource increment ($r = 0.79, p < 0.01$), confirming that structural optimization amplifies the efficacy of resource use.

A breakthrough practice in instructional leadership occurred at Zhongshan S Primary School (Case C2). The principal broke with the traditional classroom model by building a “two-teacher, three-dimensional” collaborative system: subject teachers were responsible for knowledge transfer, resource teachers focused on personalized support, and upper-grade students acted as learning partners. Classroom observation data shows that the academic achievement rate has risen to 92%.

The transformational value of interpersonal leadership was particularly evident at County H Middle School (Case T1). The principal initiated a cross-competency collaborative learning program to form heterogeneous groups of students with special needs with academically gifted, artistic, and athletic students.

Innovative use of policy-transformational leadership is flourishing in the most resource-poor V1 rural school. The principal has localized the national policy into a “Neighborhood Support” model, using the natural ties of blood and geography in the village to mobilize a support network of retired teachers, university student village officials, and community volunteers.

3.2. Application of educational leadership at different stages of education

Educational leadership in different educational stages shows significant stage characteristics and application effectiveness differences, this difference stems from the stage changes in student development needs, organizational structure and policy environment, Table 4 shows the comparison of educational leadership application cases in different educational stages. The core contradiction facing the preschool stage is the early social developmental disorder of children with special needs. The tracking data in Hangzhou Kindergarten B showed that the frequency of emotional outbursts of young children with autism in the regular environment was as high as 3.2 times per day, and the environmental adaptation cycle took an average of 127 days. The director of this kindergarten introduced tactile guided pathway design by reconstructing the physical space leadership system, controlling acoustic and visual stimuli within the neurological comfort thresholds (ambient noise $\leq 45\text{dB}$, illuminance 500-750lux). The mood swings of the autistic toddlers gradually decreased after the intervention, and the adaptation cycle to the kindergarten was reduced by about 40%.

Table 4. Different education stage education leadership application case comparison.

Educational stage	Sample calibration	Core challenge	Leadership Focus	Innovation strategy	Changes in key indicators
Preschool education	Hangzhou B kindergarten	Social adjustment disorder in special children	Environmental creation leadership	Multimodal Sensory Classroom	The adaptation cycle fell by 40%
Primary education	Zhongshan City S Primary School	The phenomenon of "mixed reading" in regular classes	Curriculum adaptation leadership	Three-dimensional collaborative teaching	The academic level is up 31%
Junior high school education	H County Experimental Middle School	Insufficient acceptance from peers	Interpersonal leadership	Cross-capability collaboration group	Social acceptance increased by 0.82SD
High school education	Shenzhen Y high school	It's difficult to make a career transition	Policy transformation leadership	School-enterprise certification system.	Job readiness is up 35%

The core conflict at the elementary level focuses on the quality pitfalls of classroom-based learning, with baseline measurements at Zhongshan City Elementary School S showing that special needs students spend only 52% of their effective learning time in the traditional classroom. The principal reconfigured the time-space structure of teaching and learning through curricular adaptive leadership: the "Advantageous Start" program was implemented during the morning reading period (8:00-8:30 a.m.), with individualized front-end tutoring by the resource teachers; the "two-teacher, three-dimensional" model was adopted for subject teaching, with subject teachers and resource teachers collaborating to design tiered task matrices. Subject teaching adopts a "two-teacher, three-dimensional" model, whereby the main subject teacher and the resource teacher collaborate to design a hierarchical task matrix:

$$T_d = \begin{bmatrix} \text{Foundation Layer} & \text{Concrete Operations} & 20\% \\ \text{Advanced Layer} & \text{Strategy Transfer} & 50\% \\ \text{Challenge Layer} & \text{Real-World Applications} & 30\% \end{bmatrix} \quad (17)$$

This structural adjustment resulted in a 31% increase in student academic attainment.

A key breakthrough at the middle school level was the rebuilding of peer relationships; baseline measures of social networks in County H middle schools showed that special needs students were on the fringes of their social networks. The principal initiated the Cross-Competency Collaborative Learning Project: special needs students were placed in heterogeneous groups with academically gifted students, art students, and athletes to complete monthly interdisciplinary project tasks. After implementation, students' social acceptance increased by 0.82 SD.

The core challenge at the high school level is the systematic disconnect of career transitions. Tracking data from Shenzhen's High School Y showed that the six-month post-graduation employment rate for special needs students was only 28%, far lower than the 91% for regular students. Principal Liu leveraged policy-transformational leadership to build a "three-dimensional certification system."

$$c_v = \alpha \cdot S_k + \beta \cdot W_c + \gamma \cdot P_a \quad (18)$$

Migration of the center of gravity of leadership in the evolution of educational stages shows a regular trajectory. Quantitative validation by multilevel regression modeling:

Among them, S_k is the school curriculum certification, W_c is the enterprise internship certification, and P_a is the job fitness certification. The system links 32 cooperating enterprises to develop job competency models, increasing the job readiness of special needs students by 35%. More importantly, a "competency passport" system has been established to visualize the professional skills of special needs students.

The migration of the center of gravity of leadership in the evolution of education stages shows a regular trajectory. Quantitatively verified by multi-layer regression modeling:

$$L_f = 0.47 \cdot e^{-0.18g} + 0.52 \cdot (1 - e^{-0.23g}) \quad (19)$$

where L_f is the leadership focal strength and g is the educational stage ordinal (preschool=1, high school=4). The model shows that environmental creation leadership ($e^{-0.18g}$) decays as the school stage rises, while interpersonal leadership ($1 - e^{-0.23g}$) continues to increase. This pattern of migration is even more pronounced in the allocation of resources: 62% of funding for professional support at the preschool level translates into investment in job fit at the high school level (78%).

The moderating effect of regional differences on the application of leadership cannot be ignored. Under the constraint of a lack of corporate resources, the principal of a township high school creatively transformed the “neighborhood workshop” model: a family workshop-style training base was established using local social networks. Although the investment in specialized equipment is only 28% of that of urban schools, the vocational skills certification rate of students is 85% of the urban benchmark.

Stage fit for educational leadership needs to follow three core principles: Timing sensitivity requires that interventions match critical periods of development, such as environmental modifications in preschool that need to be completed within three months of entry into kindergarten. Gradual intensity reflects the dynamic adjustment of support as students' autonomy improves. Peer support at the junior high school level should be gradually transitioned from teacher-led to student self-governance. The appropriateness of the vehicle emphasizes the matching of the medium with the cognitive level, and at the high school level, the abstract policy is transformed into a visual certification system. The “competence passport” system of Shenzhen Y High School is a good example of carrier innovation, which transforms implicit competence growth into a demonstrable credit asset.

The leadership relay mechanism at the stage of articulation is the key to sustainable inclusion. At the point of transition between primary and junior high school, Zhongshan City has established a “dual-principal joint system”: the principal of the graduating class of the elementary school and the principal of the junior high school work together to formulate a program for the transition of special-needs students. Tracking data show that the incidence of maladjustment among special needs students who implemented this system was reduced by 63%, significantly better than the regular process.

3.3. Key Elements of Inclusive Student Management Practices

The essence of inclusive student management practices lies in the construction of a multidimensional support system. Through the longitudinal tracking data of the six sample schools, we identify the synergistic operation mechanism of three core elements. The multi-party synergistic network constitutes the organizational foundation, the personalized education system provides precise support, and the resource support platform guarantees sustainability, and these elements form an organic whole catalyzed by educational leadership. It is worth noting that when the synergy index of the three elements exceeds the 0.75 threshold, the scores of the Special Needs Students' Sense of Belonging Scale show a nonlinear jump ($R^2 = 0.89$), which confirms the systematic effect of elemental integration. Educational leadership is reflected in this process as a “connector” and “amplifier” between the elements, and the principal activates the potential of the elements through cultural infiltration, institutional innovation and resource reorganization.

The multi-party synergy mechanism transcends the scope of traditional home-school cooperation, forming a “four-dimensional concentric circle” structure: the core is the principal's leadership team (decision-making center), the second layer is the teacher's professional community (the main body of the implementation), the third layer covers the family support network (the emotional cornerstone), and the extension integrates the community resources (the extension of the service). In the practice of County H middle schools, principals establish a monthly synergy index assessment system:

$$T_c = \frac{1}{n} \sum_{i=1}^n \left(\frac{A_i}{A_{\max}} \cdot \frac{F_i}{F_{\max}} \right) \quad (20)$$

where A_i is the depth of i th party involvement and F_i is the frequency of interaction. In-depth interviews revealed that principals broke down barriers to collaboration by “resetting decision-making seats”—parents of special needs students and community representatives held 37% of the voting power in IEP development meetings, and this reconfiguration of power allowed for the allocation of resources to better meet actual needs.

The core of the individualized education system lies in the dynamic adaptation mechanism. Shenzhen Y Middle School developed a cloud mapping system of student ability growth that visualizes three

dimensions of data: learning styles, types of barriers, and areas of strength:

$$P_s = \begin{cases} \text{Cognitive Style} & \alpha & \beta \\ \text{Barrier Characteristics} & \gamma & \delta \\ \text{Strength Potential} & \delta & \zeta \end{cases} \quad (21)$$

The system is updated quarterly to generate individualized programs. The results of the analysis of the effectiveness of key elements of inclusive student management are shown in Table 5. The data show a 31% increase in student academic attainment after the implementation of the personalized program.

The innovation of the resource support platform lies in the establishment of a demand response algorithm. In response to the shortage of resources in rural schools, the principal of school V1 created a “resource puzzle model”:

$$R_r = \sum_{k=1}^m \lambda_k \cdot \eta_k \cdot \delta_{tk} \quad (22)$$

where λ_k is the resource type weight, η_k is the availability coefficient, and δ_{tk} is the temporal adjustment factor.

Table 5. Analysis of key factors of student management.

Core elements	Mechanism of action	Entry points for educational Leadership	Sample calibration	Changes in key indicators	Contribution rate
Multi-party collaborative network	Reconfiguration of organizational relationships	Redistribution of power	Junior High School of County H	Social acceptance increased by 41%	34.7%
Personalized education	Customized development path	Course adaptability	H County Experimental Middle School	Academic level is up 31%	39.2%
Resource support platform	Precise matching of supply and demand	Local transformation power	V1 Township School	Support rose by 173%	26.1%

The synergistic effect between the elements presents a nonlinear characteristic. Regression analysis showed that when multiple synergies were optimized in tandem with personalized education, the rate of academic progress was up to 2.3 times faster than that of the optimization alone ($\beta = 0.79, p < 0.001$). The combination of resource support and synergistic network extends the increase in sense of belonging to 187%. In the practice of Zhongshan City S Primary School, the principal establishes a factor coupling monitoring dashboard and triggers an early warning mechanism when the three-factor synergy index $\gamma_s < 0.6$. This dynamic adjustment allows the school to maintain a stable development curve for special needs students (standard deviation $\sigma < 0.08$) even during the resource fluctuation period in 2023.

The differentiated pathways of educational leadership were validated through structural equation modeling:

$$L \xrightarrow{0.37} C \xrightarrow{0.68} O \xrightarrow{0.42} P \xrightarrow{0.71} A \xrightarrow{0.29} R \xrightarrow{0.63} B \quad (23)$$

where L is leadership, C is collaborative network, P is personalized education, R is resource support, O is organizational effectiveness, A is academic achievement, and B is sense of belonging. The path coefficients of the dimensions of educational leadership on the key factors are shown in Table 6. The model shows that cultural leadership has the greatest impact on the collaborative network (path coefficient of 0.68), instructional leadership dominates the implementation of personalized education (path coefficient of 0.71), and structural leadership determines the effectiveness of resource transformation (path coefficient of 0.63). This differentiation requires principals to dynamically adjust their leadership focus according to the stage of school development.

Table 6. Path coefficient.

	Cultural leadership	Structural leadership	Teaching leadership	Interpersonal leadership
Collaborative network	0.68	0.32	0.27	0.59
Personalized education	0.41	0.39	0.71	0.53
Resource support	0.29	0.63	0.37	0.42

The continuous evolution of the elemental system faces a triple challenge: the power game in the collaborative network requires principals to have the ability to transform conflicts, and in the case of T1, the principal reduced the incidence of pedagogical conflicts by 73% through the technique of the “Balance of Interests Wheel”;

The key elements of inclusive student management constitute a self-organizing ecosystem, and educational leadership is the “start-up code” and “regulating hub” of the system. When principals shape shared values through cultural leadership, build supportive frameworks through structural leadership, and promote accurate practices through instructional leadership, special needs students are transformed from objects of educational care to co-constructors of the campus ecosystem.

4. Conclusion

This study systematically explores the core mechanisms of educational leadership in promoting inclusive student management practices through a multi-case tracking and mixed-methods design. Based on empirical observations from six sample schools over a three-year cycle, educational leadership demonstrates structural empowerment value, and its effectiveness is dependent on contextually adapted and differentiated strategies.

The efficacy of inclusive student management follows the “three-element synergy law”: when the coupling index of multi-party collaborative network, personalized education system and resource support platform reaches the threshold of 0.75, the sense of belonging of special-needs students will have a non-linear leap ($R^2 = 0.89$). In the practice of the township attack school, the principal transformed the vernacular social capital into professional support alternatives through the localized resource transformation strategy, which increased the resource utilization rate by 173% while maintaining the integrity of cultural identity. It is worth noting that the paths of the leadership elements were significantly differentiated: cultural leadership dominated the construction of collaborative networks (path coefficient 0.68), instructional leadership drove the implementation of personalized education (0.71), and structural leadership determined the efficacy of resource transformation (0.63), and this division of expertise required principals to form dynamically regulated leadership portfolio strategies.

The differentiated nature of educational stages determines the direction of strategic focus for leadership application. At the preschool level, physical space is transformed into a developmental medium, and environmental anxiety is transformed into motivation for exploration through the regulation of sensory parameters (noise ≤ 45 dB, illumination 500-750lux). The core of middle school is to rebuild the peer motivation system, and cross-competency cooperative groups increase the social centrality of special needs students by 3.2 times. In high school, career transition pathways must be opened, and the “three-dimensional authentication system” increases the readiness for employment by 35%. The study also found that the leadership relay mechanism at the articulation node is crucial, and the “dual-principal joint system” reduced the maladjustment rate of primary and junior high school transition by 63%, which effectively solved the dilemma of segmentation of school segments.

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