



Fostering Primary Education Leadership Towards Effective Teacher Professional Development in Yunnan Province, China

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Abstract: This study examined the relationship between primary education leadership practices of school administrators and the teacher professional development (TPD) initiatives implemented by the university. Specifically, it assessed leadership across four dimensions—instructional, transformational, distributed, and socio-political—and explored how these influenced various aspects of professional development, including continuous learning, collaborative practices, technology integration, and contextual responsiveness. Utilizing a descriptive-correlational research design, data were gathered from 200 primary education teachers through structured survey instruments. Results indicated that instructional leadership was the most prominently practiced, while transformational and distributed leadership showed moderate implementation. Teacher professional development was rated positively overall, with contextual influences and technology integration emerging as the strongest areas, though continuous learning showed relative weaknesses. Statistical analyses revealed no significant differences in assessments based on sex or age, but notable variations were observed by teaching experience, particularly in perceptions of instructional leadership and collaborative practices. Importantly, correlation analysis revealed significant positive relationships between leadership practices and teacher professional development, especially in the domains of instructional and socio-political leadership with technology integration and continuous learning. These findings underscore the critical role of adaptive and inclusive leadership in shaping effective professional development environments. The study concludes by proposing an Enhanced Leadership Capacity-Building Program to strengthen school leadership and ensure more relevant, sustained, and impactful teacher development efforts.

Keywords: Primary Education Leadership , Instructional Leadership , Transformational Leadership , Distributed Leadership, Socio-political Leadership

Introduction

Effective leadership in primary education is pivotal for enhancing school performance and fostering teacher development, serving as a critical driver for sustainable educational quality (Li, Chan, & Hu, 2023). In China, primary education leadership encompasses various styles that impact both educational outcomes and teacher growth. Among these styles are instructional leadership, which emphasizes the role of school leaders in guiding instructional practices, and transformational leadership, which focuses on inspiring and motivating teachers to engage in continuous improvement and innovative teaching methods. Instructional leadership highlights the importance of school leaders in ensuring high-quality teaching and learning by providing clear goals, monitoring instructional delivery, and offering support to teachers. Transformational leadership, on the other hand, emphasizes the capacity of school leaders to build a shared vision, create a culture of trust, and drive school-wide improvements through collaboration and professional development. Distributed leadership is another essential component, where leadership responsibilities are shared among various stakeholders, including teachers and staff. This model promotes a collaborative environment where teachers are empowered to contribute to school leadership and has been linked to improved teacher engagement and professional growth (Zhang, 2024). Furthermore, the socio-political context of schools plays a critical role in shaping leadership practices, especially in rural areas where resources may be limited. Leaders in these schools must navigate broader societal challenges and external pressures while ensuring the provision of quality education.

Despite the recognized importance of these leadership paradigms, a significant problem persists. Research indicates that in many Chinese primary schools, principals often concentrate on daily administrative duties rather than pedagogical leadership, and many teachers feel intimidated by high-status principals, which can stifle professional collaboration (Li et al., 2023). This is particularly acute in underdeveloped regions like Yunnan Province, where systemic challenges such as resource constraints and geographical isolation compound these issues. While studies have examined leadership effects in urban or more developed settings, there is a remarkable scarcity of large-scale, quantitative research into the effectiveness of leadership and its impact on Teacher Professional Development (TPD) in rural Chinese primary schools (Li et al., 2023). Existing literature often focuses on a single leadership style, leaving a gap in understanding how a combination of instructional, transformational, distributed, and socio-political leadership practices collectively influences TPD.

Moreover, not all TPD initiatives are effective. As Li et al. (2023) found, mandated, formalized professional development often fails to improve student achievement, whereas spontaneous teacher collaboration and communication show positive



effects. Therefore, it is essential to identify which leadership practices most effectively foster the specific aspects of TPD—such as continuous learning, collaborative practices, technology integration, and contextual responsiveness—that lead to meaningful teacher growth, especially in a resource-limited environment.

This study seeks to address this problem by examining the relationship between the primary education leadership practices of school administrators and the TPD initiatives in the context of Zhaoyang District, a rural area in Yunnan Province, China. It aims to assess leadership across four dimensions able insights for developing targeted leadership capacity-building programs to enhance the effectiveness and sustainability of teacher development efforts in similar socio-economically challenged regions.

Literature Review

Primary education leadership plays a pivotal role in fostering high-quality education and ensuring effective teaching practices. Leadership in this context is defined by the ability to manage schools in ways that promote student success, teacher satisfaction, and overall school improvement (Dhillon, Howard, & Holt, 2019). Leadership in primary schools encompasses various styles, including democratic, distributed, and transformational leadership, which influence key educational outcomes such as instructional quality, teacher motivation, and inclusive education.

Leadership in primary education is often characterized by its focus on enhancing instructional practices. According to Rožman Krivec et al. (2020), "leadership for learning" is crucial in guiding teachers toward contemporary and effective instructional methods. This leadership style emphasizes collaboration between headteachers and educators, fostering a culture of continuous learning and improvement. Similarly, Peeraer et al. (2014) argue that leadership in primary schools is integral to reshaping teaching conditions and enhancing teacher quality, which, in turn, positively impacts student outcomes.

Democratic leadership is another key concept in primary education leadership. Maurice, Buhere, and Aloka (2024) highlight the importance of headteachers' democratic leadership in implementing inclusive education. By fostering teacher participation and collaboration, democratic leadership ensures that all students, including those with special needs, receive appropriate support and resources. This leadership style promotes inclusivity by encouraging diverse voices and perspectives in decision-making processes.

Moreover, transformational and instructional leadership styles are associated with strategic human resource management (HRM) in primary schools. Vekeman et al. (2016) suggest that principals who adopt transformational and instructional leadership styles tend to have a strategic orientation toward HRM, particularly when configuring practices for new teachers. This alignment between leadership and HRM is essential for improving teacher retention and performance, which are critical factors in maintaining high-quality education in primary schools.

Leadership also plays a central role in promoting teacher satisfaction and job performance. In their study on the "soft side" of Total Quality Management (TQM) in primary and secondary education, Glaveli et al. (2021) found that leadership, along with empowerment and recognition, positively influences teacher job satisfaction (TJS). The study underscores the significance of leadership in creating a quality-driven school culture where teachers feel valued and motivated to contribute to continuous improvement.

Statement of problems

The general objective of this study was to examine the relationship between primary education leadership practices and teacher professional development, taking into account the demographic profiles of teachers in selected schools in Yunnan Province. The study assessed how various leadership styles—namely instructional, transformational, distributed leadership, and socio-political factors—influenced teacher development in terms of continuous learning, collaborative practices, integration of technology, and contextual influences. Furthermore, it sought to determine whether significant differences existed in the perception of leadership practices and professional development across demographic variables, and to propose a leadership capacity-building program that strengthened leadership effectiveness and supported sustainable teacher growth in the context of primary education. Specifically, it aimed to:

1. What is the profile of the respondents in terms of:
 - 1.1. Age;
 - 1.2. Sex;
 - 1.3. Length of Teaching Experience in primary education?
2. What is the assessment of the respondents on the primary education leadership practices of the school administrators in terms of:
 - 2.1. instructional;
 - 2.2. transformational;
 - 2.3. distributed; and
 - 2.4. socio-political context?
3. Is there a significant difference in the assessment of the respondents on the primary education leadership practices of the school administrators when profile is used as test factor?

4. What is the assessment of the respondents on the teacher professional development of the university in terms of:
- 4.1. continuous learning;
 - 4.2. collaborative practices;
 - 4.3. integration of technology; and
 - 4.4. contextual influences?
5. Is there a significant difference in the assessment of the respondents on the teacher professional development of the university when profile is used as test factor?

Research Design

This study utilized a quantitative comparative correlational research design to explore the relationship between primary education leadership practices and teacher professional development at Zhaoyang District Qinggangling Central School in Zhaotong City, Yunnan Province, China, collecting numerical data from teachers to obtain objective, measurable insights into their perceptions. The comparative aspect of this design was employed to examine differences in assessments across demographic groups like age, sex, and teaching experience. Although the research was conducted at a single school, the site was selected for its high degree of typicality, embodying the defining characteristics of rural Yunnan and broader rural China — including geographic isolation, socio-economic constraints, and reliance on centralized educational policies that shape resource allocation and pedagogical practices. The systemic challenges faced by this school, such as limited professional development opportunities and infrastructural limitations, are well-documented across underserved areas in China, making this focused examination critically insightful for understanding leadership and teacher development mechanisms in similar rural educational settings.

The correlational aspect of the study was necessary to assess the strength and direction of the relationship between leadership practices (instructional, transformational, distributed, and socio-political) and various aspects of teacher professional development (continuous learning, collaborative practices, and integration of technology). This provided a deeper understanding of how leadership in primary education influenced teacher growth, which was critical in shaping effective educational practices, particularly in under-resourced, rural settings like Zhaoyang District.

This design was appropriate for the study because it allowed for an in-depth analysis of the connections between variables and helped identify patterns that could inform recommendations for leadership improvement and teacher development programs.

Research Location

This study was conducted at Zhaoyang District Qinggangling Central School, located in Zhaotong City, Yunnan Province, China. Zhaoyang District, situated in the northeast part of Yunnan Province, is characterized by a mix of urban and rural areas, with a significant portion of the population residing in underdeveloped regions. Education in these areas often faces challenges due to limited resources, infrastructure, and teacher training opportunities.

Zhaoyang District Qinggangling Central School serves a rural community and plays a pivotal role in providing primary education to students from local and surrounding areas. The school, like many others in rural China, operates with constrained resources and has a limited capacity for implementing extensive professional development programs for teachers. However, it remains a central educational institution in the region, tasked with the goal of improving learning outcomes and fostering teacher growth despite these challenges.

Sampling Method

The participants for this study were randomly selected from the pool of teachers at Zhaoyang District Qinggangling Central School in Zhaotong City, Yunnan Province, China. A total of 198 teachers were employed at the school, and based on the Qualtrics sample size calculator, a representative sample of 131 teachers was chosen to participate in the study.

The random sampling method ensured that each teacher had an equal chance of being selected, thus reducing selection bias and enhancing the generalizability of the findings. The inclusion criteria for the participants were that they had a minimum of one year of teaching experience at the primary education level, as this ensured they had sufficient exposure to the leadership practices of the school administrators and relevant professional development programs. Participants from both rural and urban backgrounds, along with varying lengths of teaching experience, were included to capture a diverse range of perspectives.

Research Instruments

This study employed a researcher-made questionnaire to collect data from teacher respondents at Zhaoyang District Qinggangling Central School. The questionnaire was designed to evaluate two main constructs: primary education leadership practices of school administrators and teacher professional development, divided into three parts.

Part 1: Profile of Respondents. The first part of the questionnaire gathered demographic information about the teacher respondents. This section included questions related to the following variables:

Age: Respondents were asked to indicate their age category to understand the distribution of ages among the teachers.

Sex: Respondents were asked to specify their gender (Male or Female) to examine any potential differences in leadership perception and professional development experiences based on gender.

Length of Teaching Experience: This section asked teachers to provide the number of years they had been teaching in primary education to understand how teaching experience influenced their perspectives on leadership and professional development.

Part 1: Primary Education Leadership Practices. This section assessed the leadership practices of school administrators in four key areas. Each sub-construct included six statements, measured using a 4-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree). The sub-constructs were as follows:

Instructional Leadership: Evaluated how administrators guided and supported teachers in instructional strategies and curriculum delivery.

Transformational Leadership: Measured how administrators inspired and motivated teachers, fostering positive changes within the school.

Distributed Leadership: Examined how leadership roles were shared among teachers and other stakeholders within the school community.

Socio-political Leadership: Focused on how administrators managed external partnerships, policies, and socio-political factors that influenced school operations.

Part 2: Teacher Professional Development. This section examined the effectiveness of teacher professional development programs in the school. Each sub-construct contained six statements, also rated on the 4-point Likert scale. The sub-constructs were:

Continuous Learning: Assesses the availability of opportunities and support for ongoing teacher development.

Collaborative Practices: Measured the extent of collaboration among teachers as part of their professional growth.

Integration of Technology: Evaluates how effectively technology is integrated into teacher development and classroom practices.

Contextual Influences: Assessed the impact of local conditions, including rural settings and resource constraints, on teacher development.

To ensure the validity of the instrument, content validation will be conducted by educational experts to guarantee that each item appropriately measures the intended constructs. Additionally, reliability testing was performed to ensure consistent results, with a focus on internal consistency across the constructs. Each sub-construct will contain six statements, and the questionnaire will be piloted before full implementation to fine-tune any ambiguities.

Ethical Considerations

In conducting this study, several ethical considerations were carefully observed to ensure the integrity of the research process and the protection of participants. First and foremost, informed consent was obtained from all participants. Teacher respondents from Zhaoyang District Qinggangling Central School received a detailed explanation of the study's purpose, procedures, potential risks, and benefits before participating. They were assured that their involvement was voluntary, and they could withdraw from the study at any time without any consequences. Written consent forms were distributed and collected prior to data collection.

Confidentiality and anonymity were strictly maintained throughout the research process. Personal information such as names, specific job titles, or any identifying details of the participants was not disclosed in any reports or publications. Each participant was assigned a unique code to protect their identity, ensuring that all data was stored securely and accessible only to the research team.

Additionally, the study ensured that no harm, whether physical, psychological, or emotional, came to the participants. The research questions and the survey instrument were carefully designed to avoid sensitive or invasive topics. Participants were informed that their responses would be used solely for academic purposes and would contribute to understanding primary education leadership and teacher professional development.

The study adhered to principles of fairness and respect for all participants. Every effort was made to ensure that no participant felt coerced or obligated to participate, and equal opportunity was given to all selected respondents to provide input.

Lastly, the study sought approval from an ethics review board or relevant authority before data collection began. This ensured that all research activities complied with institutional and national ethical standards, further safeguarding the well-being of participants and the validity of the research findings.

Results and Discussion

Variable	Category	Frequency	Percentage
Age	25-35	64	32.0%
	36-45	49	24.5%
	46-55	54	27.0%
	55 above	33	16.5%
Sex	Male	113	56.5%

	Female	87	43.5%
Length of Teaching Experience in primary education	1-5	45	22.5%
	6-10	56	28.0%
	11-15	55	27.5%
	15 above	44	22.0%

This presents the demographic profile of the respondents, which includes age, sex, and length of teaching experience in primary education. A total of 200 respondents participated in the study. In terms of age distribution, the majority fell within the 25-35 age group, comprising 64 individuals or 32.0% of the sample. This was followed by those aged 46-55, accounting for 27.0% or 54 respondents. Participants aged 36-45 made up 24.5%, while the 55 and above age category had the fewest respondents, representing 16.5% or 33 individuals. This distribution indicates a relatively balanced age spread, though there is a slight concentration of younger professionals in the field, which may reflect recent recruitment trends in primary education.

Regarding sex, the data reveal a predominance of male respondents, numbering 113 and constituting 56.5% of the total, compared to 87 female respondents or 43.5%. This gender distribution suggests a modest gender imbalance among primary educators within the respondent group. While primary education is often female-dominated in many contexts, the male majority in this sample may point to localized employment dynamics or hiring practices in the studied area.

The teaching experience of the respondents was fairly evenly distributed across the four categories. The highest percentage of respondents had 6-10 years of teaching experience, representing 28.0% or 56 individuals. Those with 11-15 years of experience closely followed at 27.5% (55 respondents). The categories of 1-5 years and 15 years and above each represented 22.5% and 22.0% respectively, with 45 and 44 respondents. This even distribution across experience levels suggests a broad representation of teaching perspectives, from novice educators to seasoned professionals, providing a well-rounded basis for evaluating educational leadership practices.

Assessment of the Respondents on the primary Education Leadership Practices of the School Administrators in terms of Instructional Leadership

Indicator	Weighted Mean	Standard Deviation	Qualitative Description	Verbal Interpretation	Rank
1. The school administrators provide clear guidance on instructional strategies.	3.28	0.79	Agree	Practiced	3
2. Administrators support teachers in improving their curriculum delivery.	3.26	0.81	Agree	Practiced	4
3. Regular feedback is given by the administration to help enhance teaching practices.	3.33	0.77	Agree	Practiced	2
4. School leaders ensure that teachers have access to resources for effective instruction.	3.55	0.71	Strongly Agree	Highly Practiced	1
5. Administrators prioritize instructional quality in school decision-making.	3.2	0.78	Agree	Practiced	5
6. There is a strong focus on aligning teaching methods	3.19	0.92	Agree	Practiced	6

with student needs.					
Overall Mean	3.30	0.34	Agree	Practiced	

Legend: 3.51 – 4.00 (Strongly Agree-Highly Practiced); 2.51 – 3.50 (Agree- Practiced); 1.51 – 2.50 (Disagree-Slightly Practiced); 1.0-1.50 (Strongly Disagree-Not Practiced)

This table outlines how respondents assess the instructional leadership practices of their school administrators. The overall mean score is 3.30 with a standard deviation of 0.34, falling within the "Agree" range, interpreted as "Practiced." This indicates that, overall, school administrators are perceived to demonstrate consistent and satisfactory instructional leadership, although there remains room for improvement towards higher levels of performance.

Among the six indicators, the highest-rated item is "School leaders ensure that teachers have access to resources for effective instruction," which earned a weighted mean of 3.55. This score places it in the "Strongly Agree" category and is interpreted as "Highly Practiced," suggesting that resource accessibility is a key strength of the administrators' leadership practices. This finding is particularly significant, as resource support directly affects teachers' ability to deliver quality education, and high marks in this area reflect positively on the administrators' responsiveness to instructional needs.

The second-highest rated practice is the provision of regular feedback, which received a weighted mean of 3.33. Feedback mechanisms are essential for professional growth, and this rating indicates that respondents acknowledge the administrators' effort to guide instructional improvement through constructive evaluation. The third-highest score was for providing clear guidance on instructional strategies (mean = 3.28), reinforcing the perception that administrators play an active role in shaping pedagogical approaches.

On the lower end, "There is a strong focus on aligning teaching methods with student needs" received the lowest mean score of 3.19, although it still falls within the "Agree" range. This suggests that while the practice is acknowledged, there may be inconsistencies or limitations in how administrators tailor instructional leadership to meet diverse student needs. Similarly, "Administrators prioritize instructional quality in school decision-making" received a score of 3.20, placing it just slightly above the lowest-rated item. These lower scores may indicate areas where school leadership could become more strategic and inclusive of pedagogical input in their decision-making processes.

An interesting finding lies in the tight clustering of the mean scores, with all values ranging from 3.19 to 3.55. This narrow range reflects a general consensus among respondents that leadership practices are present and functional, though not uniformly excellent. The relatively low standard deviation values, especially the overall SD of 0.34, also indicate consistent responses across the sample, suggesting shared perceptions regarding the instructional leadership in their schools.

Differences in the Assessment of the Respondents on the primary Education Leadership Practices of the School Administrators in terms of Length of Teaching Experience in Primary Education

Indicator	Length of Teaching Experience in primary education	Mean	F	Sig.	Decision on Ho	Interpretation
Instructional	1-5 6-10 11-15 15 above	3.40 3.26 3.18 3.40	5.472	.001	Rejected	Significant
Transformational	1-5 6-10 11-15 15 above	3.07 3.19 3.16 3.07	1.201	.311	Accepted	Not Significant
Distributed	1-5 6-10 11-15 15 above	3.11 3.17 3.17 3.12	.226	.879	Accepted	Not Significant
Socio-political context	1-5 6-10 11-15 15 above	3.23 3.07 3.23 3.11	2.254	.083	Accepted	Not Significant
Overall	1-5 6-10 11-15 15 above	3.20 3.17 3.19 3.18	.179	.911	Accepted	Not Significant

This analyzes whether teaching experience affects how respondents evaluate school leadership. Interestingly, a significant difference is observed in the instructional leadership domain. Teachers with 1-5 and 15+ years of experience rated instructional leadership the highest (both at 3.40), while those with 11-15 years gave the lowest rating (3.18). The result is statistically significant ($F = 5.472$, $p = .001$), indicating that teaching experience does influence how instructional leadership is perceived. This might reflect differing expectations or exposure to leadership styles, where novice and very experienced teachers may feel more supported, while mid-career teachers could perceive less instructional guidance or engagement.

For other domains—transformational, distributed, and socio-political leadership—the differences in mean scores by experience level are minimal and statistically insignificant. For example, transformational leadership ratings range narrowly from 3.07 to 3.19, and ANOVA confirms no significant difference ($F = 1.201$, $p = .311$). The same trend holds for distributed and socio-political leadership, where mean values differ only slightly, and none of the F-values indicate statistical significance.

In terms of the overall assessment, all groups reported similar means (ranging from 3.17 to 3.20), with no significant difference ($F = .179$, $p = .911$). These results suggest that while teaching experience affects perceptions of instructional leadership specifically, it does not significantly alter overall or broader leadership evaluations.

Differences in the Assessment of the Respondents on the Teacher Professional Development of the University in terms of Length of Teaching Experience in Primary Education

Indicator	Length of Teaching Experience in primary education	Mean	F	Sig.	Decision on Ho	Interpretation
Continuous Learning	1-5	3.18	2.553	.057	Accepted	Not Significant
	6-10	3.23				
	11-15	3.21				
	15 above	3.06				
Collaborative Practices	1-5	3.32	3.303	.021	Rejected	Significant
	6-10	3.16				
	11-15	3.25				
	15 above	3.35				
Integration Of Technology	1-5	3.36	.456	.713	Accepted	Not Significant
	6-10	3.37				
	11-15	3.29				
	15 above	3.34				
Contextual Influences	1-5	3.5	.664	.575	Accepted	Not Significant
	6-10	3.46				
	11-15	3.42				
	15 above	3.5				
Overall	1-5	3.34	.583	.627	Accepted	Not Significant
	6-10	3.30				
	11-15	3.29				
	15 above	3.32				

This table presents a nuanced view of how perceptions of professional development vary based on the length of teaching experience. While most domains did not yield statistically significant differences, one notable exception was found in Collaborative Practices. Respondents with 15 or more years of experience reported the highest mean score (3.35), followed closely by those with 1–5 years (3.32), while those with 6–10 years had the lowest (3.16). This difference was statistically significant ($F = 3.303$, $p = .021$), suggesting that both novice and veteran teachers perceive collaborative opportunities more positively, possibly due to more open attitudes in the early stages of their careers and accumulated networks and trust in later stages.

In contrast, Continuous Learning had a borderline result, with a p-value of .057, indicating a trend toward significance but ultimately accepted as non-significant. Interestingly, the most experienced group (15+ years) gave the lowest rating (3.06), while those with 6–10 years scored highest (3.23), possibly reflecting shifts in access or attitudes toward learning over career stages.

In the Integration of Technology and Contextual Influences domains, the differences across experience levels were not significant, with F-values of .456 ($p = .713$) and .664 ($p = .575$) respectively. Ratings were consistently high in Contextual Influences across all groups, indicating a shared understanding of how local factors impact professional development regardless of tenure. Similarly, the overall means for all groups ranged narrowly between 3.29 and 3.34, with no significant differences ($F = .583$, $p = .627$).

Conclusions

1.The study concluded that the respondents represented a well-balanced demographic profile in terms of age, sex, and teaching experience. The predominance of teachers aged 25–35 reflects a relatively young workforce, while the close distribution across experience levels ensures insights from both novice and seasoned educators. This diverse representation strengthens the validity of the findings and confirms that the perspectives captured offer a broad and credible understanding of leadership and professional development practices in primary education.

2.It is concluded that school administrators are perceived to practice effective leadership, with instructional leadership emerging as the most prominent. Administrators were recognized for providing adequate teaching resources, although there remains a need to enhance their focus on aligning instruction with student needs and integrating teacher input into decision-making. The consistently moderate scores across transformational, distributed, and socio-political leadership suggest these styles are acknowledged but not yet fully embedded in practice, indicating areas for strategic improvement.

3.The study found that while sex and age did not significantly affect perceptions of leadership, teaching experience did influence assessments, particularly in instructional leadership. Mid-career teachers (11–15 years) reported lower satisfaction, pointing to a potential gap in leadership support during this professional stage. Age also played a role in how socio-political leadership was perceived, with older teachers expressing more favorable views. These results underscore the importance of differentiated leadership approaches that are sensitive to the evolving expectations and experiences across a teacher's career trajectory.

4.Teacher professional development programs were evaluated positively overall, with strong emphasis placed on responsiveness to contextual challenges and the integration of technology. However, continuous learning was the least developed area, highlighting gaps in sustained teacher growth initiatives. The findings call for a more robust structure for lifelong learning, greater alignment of training with teachers' actual needs, and more consistent opportunities for engagement in relevant workshops and seminars.

5.There were no significant differences in assessments based on sex or age, affirming consistency in how professional development is experienced. However, years of teaching experience significantly influenced views on collaborative practices, with novice and veteran teachers reporting greater satisfaction compared to those in mid-career. This indicates the need for differentiated support in collaborative initiatives, ensuring all educators, regardless of career stage, are engaged in meaningful and productive professional interactions.

The study concludes that there is a significant and positive relationship between school leadership practices and the effectiveness of teacher professional development. Instructional leadership was strongly linked to the integration of technology, while transformational and socio-political leadership were associated with continuous learning. These correlations affirm that when school leaders are proactive, inclusive, and adaptive, they enhance not only instructional quality but also the depth and relevance of professional growth opportunities. Strengthening leadership capacities is therefore essential for sustaining impactful and future-ready professional development in education.

Recommendations

1.It is recommended that school administrators enhance their instructional leadership by actively aligning teaching methods with student needs. This includes involving teachers in curriculum planning and instructional decision-making to ensure pedagogical relevance. Professional development for administrators should include training on inclusive, data-driven leadership that promotes differentiated instruction and adaptive teaching strategies.

2.Given the significant differences found in leadership assessments across teaching experience levels, particularly in instructional leadership, it is vital for school leaders to differentiate their support strategies. Mid-career teachers (11–15 years) should be given targeted leadership engagement and mentorship opportunities to address their specific developmental needs, avoid stagnation, and promote continued growth and motivation.

3.The university should prioritize the expansion and regular scheduling of professional development programs focused on continuous learning. More structured and frequent workshops, online training modules, and in-service courses should be implemented. These offerings should be closely aligned with current classroom realities and the individualized needs of teachers to maximize relevance and participation.

4.To address the disparity in collaborative practice perceptions, especially among mid-career teachers, schools should institutionalize collaborative planning time and cross-experience mentoring. Initiatives such as professional learning communities (PLCs), team teaching models, and peer coaching can enhance collaboration and foster shared responsibility for school improvement.

5.The study underscores a strong correlation between effective leadership and technology-integrated teacher development. The university and schools should co-develop professional development content that not only introduces digital tools but also models best practices in technology-enhanced instruction. This includes continuous upskilling for both teachers and school leaders in emerging educational technologies.

To further enhance the impact of leadership on teacher professional development, administrators should be equipped with training in socio-political navigation, community engagement, and contextual responsiveness. Programs that develop leaders' skills in policy advocacy, resource mobilization, and strategic partnerships will enable them to better support teachers in rural or underserved areas.

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