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The Interplay between Principal's Instructional Leadership and Teachers' Professional Development

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ABSTRACT

This study examines the relationship between instructional leadership of school principals with teachers' professional development. A quantitative correlational research approach was adopted to collect data from 959 secondary school teachers using a survey technique in four districts of Malakand division, KP. The primary objective was to quantify the relationship between principals' instructional leadership (PIL) and its three dimensions (defining the school mission (DSM), managing instructional programs (MIP), and developing the school learning climate (DSLC)) and teachers' professional development (TPD). The data was analyzed using statistical tools, including linear and multiple regression techniques. The findings revealed principals' instructional leadership's positive and robust impact on teachers' professional development. The analysis also unveiled that each sub-construct of principals' instructional leadership DSM, MIP, and DSLC contributes to teachers' professional development. The findings suggest that PIL and its dimensions are theoretical constructs and critical factors in shaping TPD. The results have significant implications for educational practices and policy development. By understanding the distinct contributions of DSM, MIP, and DSL, targeted interventions can be designed that leverage these sub-constructs to improve educational outcomes practically and effectively.

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Introduction

The role of a school principal is crucial for the overall development of schools (Rini, Hariri, & Sukamto, 2020). As instructional leaders, school principals can promote an environment that

supports and encourages teachers' professional growth (Yunus, Abdullah, & Jusoh, 2019). Instructional leadership refers to the principal's ability to guide, support, and empower teachers to improve their instructional practices (Suryani, Somantri, & Kartiwi, 2020), which can impact school teaching and learning practices. They can recognize problems of growth and change, as well as teacher conflict regarding changing roles (Mustaqim, Nuryadika, Natalia, & Sowiyah, 2021). As instructional leaders, principals support teachers and provide guidance and resources (Enueme & Egwunyenga, 2008). Principals who adopt a collaborative approach are more likely to develop relationships with teachers with trust, honesty, and self-determination (Iqbal, 2021). Principals' instructional leadership behaviors, management and supervision competencies can significantly impact teachers' performance, and the overall quality of education (Mustaqim et al., 2021), and teacher's professional development is crucial for improving teaching practices and student learning outcomes (Suryani et al., 2020). Studies have provided evidences of correlation between PIL and teachers' professional development TPD (Li. 2014; Ullah, Khan, & Khan, 2020). However, there is insufficient empirical evidence about the effects of secondary and higher secondary school principals' instructional leadership on teachers' professional development.

Instructional Leadership

Instructional leaders set common goals for student learning, support continuous school improvement through joint planning, set high teaching-learning standards, coordinate curriculum, monitor outcomes, actively promote staff development, and embody the school's values to improve the teaching process (Kilag & Sasan, 2023). Effective instructional leaders set clear goals, manage curriculum, monitor lesson plans, allocate resources, and evaluate teachers (Robinson, Lloyd, & Rowe, 2008). Research indicates that principals' instructional leadership is crucial for fostering a supportive environment that promotes teacher development (Day, Gu, & Sammons, 2016).

Instructional leadership has gained increased recognition among researchers, decision-makers, and practitioners worldwide due to the rapid changes in the domain of school leadership, policies and plans, competition, curriculum changes, technology and its dynamics, and globalization (Bellibaş, Kılınç, & Polatcan, 2021). Researchers have developed frameworks that outline the most essential aspects of instructional leadership practice for school principals (Hallinger & Wang, 2015). This study is based on Hallinger and Wang's (2015) instructional leadership framework; their instructional leadership framework concentrated on three core areas: DMS, MIP, and DSLC, which are further classified into ten instructional leadership practices. Principals prioritizing instructional leadership create conditions that encourage continuous learning and improvement among teachers. These leaders support professional development by providing resources, facilitating collaboration, and fostering a culture of learning (Robinson, 2010).

Defining the School Mission (DSM)

Defining the school mission is one of the core responsibilities of instructional leaders. A clear, focused school mission provides direction and purpose, aligning the efforts of teachers and staff toward common goals (Hallinger and Wang, 2015). School mission promotes a shared vision of success, fostering a sense of collective responsibility among educators. The goals and vision motivate others to work together to achieve a shared goal and provide guidance on staffing, allocating resources, and adopting curricular programs (Hallinger and Wang, 2015).

Managing the Instructional Program

Managing the instructional program involves organizing and coordinating curriculum, assessment of instructional practice, and monitoring student growth in learning (Louis, Leithwood,

Wahlstrom, & Anderson, 2010). In a similar study, researchers have clearly stated that instructional leaders engage in activities such as observing classrooms, providing feedback, and facilitating professional development opportunities. The role of the principal in managing the instructional program reflects what the school principals involve in coordinating, managing, and evaluating instructional practice and monitoring the progress of students learning (Hallinger & Wang, 2015).

Developing the School Learning Climate

Developing a positive school learning climate involves creating an environment that supports the teaching-learning process, promotes collaboration, and encourages continuous improvement. Positive school climate is characterized by trust, respect, and a sense of community among teachers and students). This dimension focuses on how effective principals build cultures of continuous professional development and align rewards with educational objectives, practices, and outcomes (Hallinger & Wang, 2015).

Teachers' Professional Development

Teachers' professional development encompasses various activities that enhance teachers' skills, knowledge, and effectiveness in the classroom (Desimone, 2009). It includes formal methods such as workshops, seminars, and conferences, as well as informal practices like peer observation and collaborative learning (Avalos, 2011). Continuous professional development is vital for teachers to keep up with the evolving educational landscape and to improve student outcomes (Ahmad, Ali, & Sewani, 2021). Teachers' professional development is influenced by many personal attributes, including cognition, passion, and aptitude; the school culture, like collaboration and cooperation; and professional exposure, such as quality schooling and training, which may enhance or hinder the acceleration of their professional learning (Whitworth & Chiu, 2015). Ghimire (2022) identified some factors that affect professional development, including teaching experience, school culture, Modeling, School background, interaction, motivation, and training.

Kusmaryani, Siregar, Widjaja, & Jatnika, (2016) have affirmed in their research the significant impact of internal and external factors on supporting professional development. Personal or internal factors, such as motivation and occupational commitment, are pivotal in self-adjustment for professional development, particularly in managing high and demanding workloads. As an external factor, the school environment significantly influences professional development. It does so by offering opportunities and resources for professional development programs, thereby shaping the professional growth of educators (Ahmad & Hamid, 2021). The research finding of Bayar (2013) reveals that teachers' personal characteristics, internal and external factors significantly influence teacher engagement in professional development. The research finding of Lutfiyana and Sugito (2019) reveals a positive and significant effect of the principal's leadership, organizational commitment, and school culture on teacher professionalism development. It is concluded that principals can significantly impact the quality and effectiveness of teacher professional development (Kim & Lee, 2020; Li, 2014).

Statement of the Problem

Instructional leadership is crucial for the success of any educational institution (Kilag, Abendan, Calledo, Diano, & Morales, 2023). Principals play a crucial role in fostering the professional development of teachers, which can significantly impact student learning outcomes (Nixon, 2015). However, the specific relationship between principals' instructional leadership practices and teachers' professional growth remains a less explored area in secondary and higher secondary schools that warrants further investigation (Enueme & Egwunyenga, 2008; Dones, 2020).

Literature reveals that leadership styles and managerial behaviors can influence teachers' motivation, commitment, and willingness to engage in professional development activities (Yunus et al., 2019). Specifically, principals who demonstrate strong instructional leadership by providing ongoing support, feedback, and resources for teachers are more likely to nurture an environment conducive to continual learning and improvement (Iqbal, 2021). However, the mechanisms by which this relationship manifests and the contextual factors that may improve or hinder it still need to be fully understood (Mariyati, 2019). According to Sebastian and Allensworth (2012), TPD is the most important way for instructional leaders to impact classroom practices and student achievement. The core of IL theory supports a heavy focus on teacher learning as a crucial tool for boosting student achievement. So, it is crucial to determine and quantify the strength and direction of the relationship between PIL and TPD. This research paper investigates the dynamic interplay between PIL practices and TPD within the educational system. By dissecting this relationship, the study aims to unearth insights that can lead to more effective strategies for school leadership and teacher professional growth.

Research Objective

The aim of this research was to analyze the relationship between principals' instructional leadership and its three dimensions (defining school mission, managing instructional program and developing the school learning climate) with teacher professional development.

Conceptual Framework

The conceptual framework demonstrates the interplay between principals' instructional leadership and its three dimensions (defining the school-mission, managing the instructional program, and developing the school learning climate) as independent variables and teachers' professional development as a dependent variable. The framework has been presented in the following diagram form.

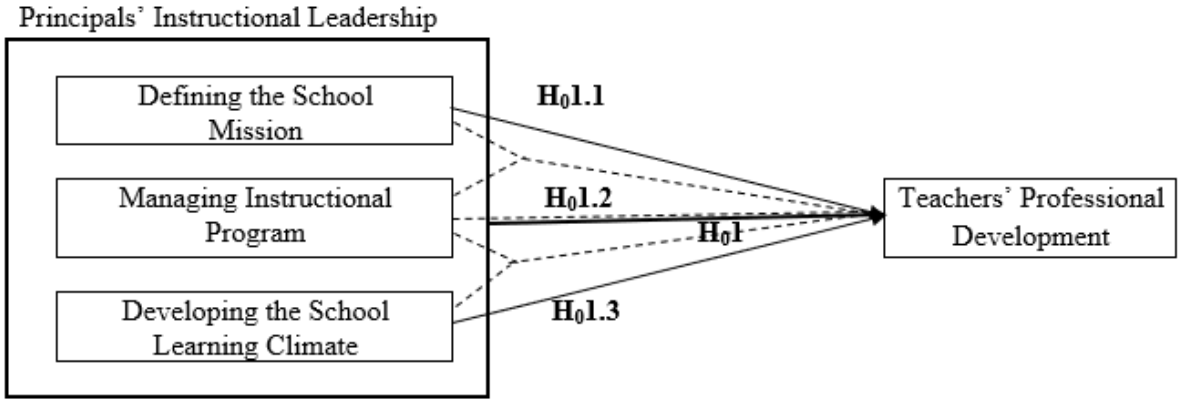

Figure 1.3.1 Conceptual Framework

Hypotheses of the study

$H_0$1: There is no significant relationship between principals' instructional leadership and teachers' professional development.

H01.1: There is no significant relationship between defining the school mission component of principals' instructional leadership and teacher professional development.

H01.2: There is no significant relationship between managing the instructional program component of principals' instructional leadership and teacher professional development.

H01.3: There is no significant relationship between developing the school learning climate component of principals' instructional leadership and teacher professional development.

Methodology

Design

The researchers have employed a quantitative approach in this descriptive cross-sectional study to examine the relationship between principals' instructional leadership (PIL) and teachers' professional development (TPD). The study was based on the positivist paradigm that provides the theoretical underpinnings for the investigation. It is posited that reality is objectively constructed under the positivist paradigm. Acquiring knowledge about the phenomenon is accomplished objectively. A quantitative approach was adopted to unveil and quantify the participants' latent insights into the subject under investigation through research scales. Survey techniques were employed to obtain data from the participants to look into the current state of the variables and their relationship.

Participants

A multi-stage cluster sampling techniques associated with random sampling were used to select the sample. A total of (n=959) secondary school teachers (607 male and 352 female) participated in the study from 120 (75 boys, 45 girls) selected schools across the four cluster districts (Swat, Malakand, Lower dir., Upper Dir) of Malakand division, Khyber Pakhtunkhwa.

Measures

Two scales were adapted from the original version to fit into the local environment's requirements to measure two primary constructs: principals' instructional leadership and Teachers' professional development. Principals' instructional leadership was measured using the PIL scale developed by Hallinger et al. (2015), and Teachers' professional development was measured using the TPD scale developed by Ayyoobi, Pourshafei and Asgari (2016).

Reliability and validity

For pilot testing, the scales were administered to 20 % of sample respondents who were not included in the larger sample during data collection for the study. The validity and reliability of these scales were checked. Experts in the field of education verified the construct validity. The reliability was confirmed through Cronbach's alpha. The Cronbach's alpha coefficient of reliability of PIL was 0.95, and TPD was 0.89. The Alpha reliability coefficient of the subscales (DSM, MIP, and DSLC) of PIL was 0.77, 0.87, and 0.90, respectively, which is acceptable according to guidelines given by law (2004).

Data collection procedure

The researcher personally visited all the selected Schools to administer the rating scales among the study sample and obtained their consent to participate in the study. They were briefed about the study's objectives and introduced to the scales. The respondents showed willingness to participate in the study. The scales were designed using a 5-point Likert scale response format (a value from 1

to 5). The questionnaires were returned by the respondents on the spot. The response rate was 100%.

Data analysis

Inferential statistics were employed to test the hypothesis. Various linear and multiple regression models were proposed to examine the relationship between PIL and its three dimensions (DSM, MIP, and DSLC) and TPD. The collected data were analyzed using statistical software for Social Science (SPSS) version 26.0. The results were presented in different tables, and the hypotheses were tested with 95% level of significance for possible acceptance or rejection.

Results

Table 1: Relationship between PIL and TPD

Variable	B	β	SE	t	Sig.
Constant	.43		.022	19.538	.000
PIL	.42	.40	.031	13.668	.000
R^2	0.16				

Note. Sample size, n=959, F (1,957) = 186.817, P<0.05

Table 1 provides a linear regression analysis of the relationship between PIL and TPD. The result indicates that the unstandardized coefficient for principal instructional leadership (B= 0.42) means that with each one-unit increase in PIL, TPD increases by 0.42 units. The standardized coefficient (β=0.40) shows the strength and direction of the relationship and suggests a positive moderate effect of PIL on TPD. The t-test (t (957) = 13.668, and P=< 0.05) indicates that the relationship is statistically significant, endorsing that PIL strongly predicts TPD. The R^2 =0.16 indicates that PIL explains 16% of the variance in teacher professional development, indicating a moderate effect size. Lastly, the F-statistic (F (1,957) =186.817 and P < 0.05) indicates that the overall model is statistically significant, with PIL essential in explaining variations in TPD.

Table 1: Relationship between DSM and TPD.

Variable	B	β	SE	t	Sig.
Constant	0.53		.020	25.851	.000
DSM	0.31	.31	.031	10.008	.000
R^2	0.09				

Note. Sample size, n=959, F (1,957) = 100.157, P<0.05

Table 2 provides a linear regression analysis exploring the association between DSM and TPD. Inquiring about the influence of DSM, the unstandardized coefficient (B= 0.31) indicates that a single unit raise in DSM aligns with a 0.31 unit raise in TPD. The standardized coefficient (β =.31 and SE=0.31) shows that DSM has a balanced significant impact on TPD and precision of the estimated value. The t-test values (t (257) = 10.008 and P<0.05) show that, coherently, DSM is a significant predictor of TPD. The (R^2 = 0.09) indicates that the model explains 9% of the variability in TPD, and the role of DSM is significant. The result suggests that other factors may also influence teacher TPD. The result of the F-test (F (1,957) = 100.157, p < 0.05) shows as a whole, the model is significant. On the other hand, the R^2 illuminates the complication of determinants impacting TPD and reinforces the need for ongoing research.

Table 2: Relationship between MIP and TPD.

Variable	B	B	SE	T	Sig.
Constant	0.50		.020	25.659	.000
MIP	0.33	0.35	.028	11.615	.000
R^2	0.12				

Note. Sample size, n=959, F (1,957) = 134.913, P<0.05

Table 3 exhibits a linear regression analysis investigating the influence of the MIP sub-construct of instructional leadership on teacher professional development. The slope (B=0.33) for MIP indicates that TPD is expected to change by 0.33 units, with a single unit change in the MIP. This positive connection is endorsed by a standardized coefficient (β =0.35 and SE= 0.028) that reflects a mild to solid effect. In the same way, the t-test t (257) = 11.615 and P< 0.05) confirm the significance of effect size and show that this result is not caused by random chance, which inculcates certainty in findings. Further, the (R^2= 0.12) indicates that the level of MIP explains 12% of the variance in TPD. However, it also implies that other factors explain 88% of the variance in TPD, which is not part of the model. The F-test was conducted for overall significance, and the value (F (1,957) =134.913, P=0.00 <0.05) shows the overall significance of this linear regression model. The finding reflects that MIP is an essential estimator of TPD.

Table 4: Relationship between DSLC and TPD.

Variable	B	β	SE	t	Sig.
Constant	0.44		.023	18.821	.000
DSLC	0.41	.37	.034	12.470	.000
R^2	0.14				

Note. Sample size, n=959, F (1,958) = 155.492, P<0.05

Table 4 provides insights into the relationship between DSLC and TPD through regression analysis. The Unstandardized coefficient (B=0.41) for DSLC shows that each unit increase in the school learning climate increases TPD by 0.41 units. The standardized coefficient (β=0.37 and SE= 0.034) indicates a moderate positive relationship between the two constructs. It shows that as the school learning climate improves, TPD also tends to improve, and the precision of this coefficient estimate is relatively high. The t-test result (t (257) =12.470 and P< 0.05) confirms that the relationship between DSLC and TPD is significant. The value of (R2= 0.14) reveals that DSLC explained 14% of the variance in TPD. This type of meaningful relationship indicates that other factors affecting TPD are not included in this model. As a whole, the significance of this linear regression model was supported by the F-test (F (1,257) =155.492 and P< 0.05), confirming that DSLC is a reliable predictor of TPD.

Table 5.3: Predicting TPD from DSM, MIP and DSLC.

Variable	B	β	SE	t	Sig.
Constant	0.41		0.024	15.786	.000
DSM	0.12	0.12	0.037	3.373	.001
MIP	0.11	0.12	0.046	2.386	.017
DSLC	0.24	0.21	0.056	4.194	.000
R^2	0.16				

Note. Sample size, n=959, F (3,955) = 59.835, P<0.05

Table 7.5 shows the multiple regression analysis investigating the relationship between three independent variables: DSM, MIP, DSLC, and TPD. The coefficient for DSM is (B= 0.12), for

MIP is (B=0.11), and for DSLC is (B=0.24), revealing that TPD increases by 0.12, 0.12, and 0.24 unit with a single unit increase in DSM, MIP and DSLC respectively. The standardized coefficient (β=0.12 and t (255) =3.373) supports a moderate positive relationship, with a (P-value < 0.05), showing that the influence of DSM on TPD is statistically significant. The standardized coefficient (β=0.12 and t (255) =2.386 with P < 0.05) confirms that the impact of MIP on TPD is statistically significant. The standardized coefficient (β=0.21, t (255) =4.194 with P-value <0.05) confirms that DSLC has a significant positive impact on TPD. The value of R^2, which is (0.16), proposes that all three independent variables explain 16% of the variability in TPD. This result indicates that while these independent variables contribute to improving TPD, other factors not included in the model can play a role. Overall, this multiple regression model is significant, as confirmed by the F-test result (F (3, 955) = 59.835, P< .05), indicating that the integrated influence of all three independent variables is significant.

Table 4: Multiple Regression Analysis of TPD on DSM and MIP.

Variable	B	β	SE	t	Sig.
Constant	0.35		0.024	20.360	0.000
DSM	0.17	0.17	0.029	4.623	0.000
MIP	0.25	0.26	0.038	7.315	0.000
R^2	0.14				

Note. Sample size, n=959, F (2,956) = 79.577, P<0.05

Table 6 presents the multiple regression analysis exploring the relationship between TPD and two independent variables, DSM and MIP. The value of the unstandardized coefficient (B=0.17) for DSM indicates that DSM influences TPD. Single-unit enhancement in DSM enhances the TPD rating by 0.17 units. The standardized coefficient (β =0.17) shows a reasonable effect size. The values of t-statistics (t (956) = 4.623 and P< 0.05) show that it is statistically significant. MIP also significantly impacts TPD as the value of (B=0.25) indicates that a point increase in MIP increases 0.25 points TPD. The standardized coefficient (β=0.26) for MIP demonstrates a marginally more definitive impact than DSM, sustaining a balancing effect. The t-test (t (956) = 7.315 and P<0.05) indicates that it is statistically significant. The value of R square shows the fitness of the overall model. The model's overall fit is of utmost importance; R2 =0.14 reveals that the consolidated effects of DSM and MIP can explain a 14% variance in TPD. However, the significance of the model was confirmed by the F-test; the model was statistically significant, as evidenced by the (F (2,256) = 79.577 and P< 0.05), it explains a moderate fraction of the variability, which shows other factors may also influence TPD which is not part of this model. In summary, both the independent variables are predictors of TPD effectiveness; however, MIP has a slightly more substantial impact.

Table 5: Regression Analysis of Predicating TPD from DSM and DSLC.

Variable	B	β	SE	t	Sig.
Constant	0.40		0.024	16.740	0.000
DSM	0.14	0.14	0.036	3.894	0.000
DSLC	0.33	0.29	0.041	8.124	0.000
R^2	0.15				

Note. Sample size, n=959, F (2,956) = 86.886, P<0.05

Table 7 provides a detailed analysis of a multiple regression model that explains the impact of two key variables, DSM and DSLC, on TPD. For DSM, the unstandardized coefficient (B= 0.14) indicates that TPD is predicted to increase by 0.14 units for a single unit increase in this variable. The standardized coefficient (β=0.14) reflects the power of this relationship in terms of variation.

The SE for this independent variable is 0.036, with (t (958) =3.894 P<0.05) showing that the impact of DSM on TPD is significant. Comparatively, the coefficient of DSLC (B=0.33) indicates that one-unit increase in this construct leads to a 0.33 increase in TPD. The value (β= 0.29 and SE=0.041) indicates a solid long-term magnitude of the effect. The significance of the relationship was also confirmed by a t-test (t (956) = 8.124, P<0.05). In general, this model's (R^2=0.15) value explains 15% of the variation in TPD; the independent variables significantly influence TPD, but there are other influencing factors as well. The result of an F-test (F (2,956) = 86.886 and P<0.05) confirms that the combination of both independent variables significantly explains variation in TPD.

Table 6: Multiple Regression Analysis of TPD on MIP and DSLC.

Variable	B	β	SE	t	Sig.
Constant	0.43		0.023	18.677	0.000
MIP	0.13	0.15	0.045	3.076	0.000
DSLC	0.28	0.26	0.055	5.259	0.000
R^2	0.14				

Note. Sample size, n=959, F (2,956) = 83.162, P<0.05

The regression analysis in Table 8 examines the variables MIP and DSLC impacting TPD. The unstandardized coefficient for MIP is (B=0.13), indicating that one-unit increase in MIP corresponds to a 0.13-unit increase in the dependent variable. The value of (β= 0.15) suggests that this independent variable has a medium effect size compared to other constructs in the model. The t-test shows the significance of the relationship as (t (956) =3.076 and P< 0.05). On the other hand, the coefficient is (B=0.28), indicating that a single-unit increase in this area is related to a substantial 0.28-units increase in the TPD. The value of (β =0.26) has a more significant effect than the first independent variable. The t-test value is ((t (956) =5.259 and P<0.05), which highlights the statistically significant effect of DSLC. This multiple regression model's (R^2 = 0.14) shows that the independent variables explain 14% of the variance in the dependent variable, with the overall model being significant, and additional variables may also play a role.

Discussion

The relationship between PIL and TPD is a crucial area of research in educational administration and leadership. Principals, as the primary leaders in schools, play a pivotal role in shaping the teaching and learning environment, and their instructional leadership can play a significant role in TPD (Bredeson, 2000). The findings of this study showed that PIL significantly impacts TPD in the context of secondary education. The results confirmed the conclusion of Chalikias, Raftopoulou, Sidiropoulos, Kyriakopoulos, and Zakopoulos (2020) that school principals play an essential role as a contributing factor in TPD and the findings of Kilag and Sasan (2023) that instructional leadership plays a significant role in TPD. The positive and substantial impact of PIL on TPD in this study is also supported by Amin's (2021) finding that there is a moderate correlation between PIL and TPD and Ullah's (2022) finding that there is a substantial impact on enhancing TPD.

The present study's result is also similar to Li's (2014) findings that the role of the school principal in instructional practice is dynamic and related to TPD and the conclusion of Hosseingholizadeh, Amrahi, and El-Farr (2023) that PIL is critical in supporting TPD. The findings of this study are also the same as those of the study conducted in three Asian countries by Kim and Lee (2020), which provides evidence of a strong relationship between principal leadership and TPD. It was found in this study that dimensions of instructional leadership also have a positive impact on TPD,

supported by the conclusion of Ahmad, Ali, and Sewani (2021) that the Components of instructional leadership, such as a curriculum implementer, monitors student progress, and protects instructional time in the classroom, positively influences TPD. The positive influence of PIL on TPD is the same spirit as the result of the following studies that the success and failure of a school depend upon the school leader, and his contribution is significantly related to the effectiveness of the school (Lazaridou & Iordanides, 2011; Hallinger & Heck, 1998) and student achievement (McLeskey et al., 2016).

Conclusion

An essential aim of this current research was to study the relationship between principals' instructional leadership (PIL) and teachers' professional development (TPD). The results of various regression models show that PIL and its three dimensions (DSM, MIP, and DSLC) play a significant role in TPD. This relationship between PIL and TPD further strengthens TPD. It was concluded that PIL positively impacts TPD. All three dimensions of instructional leadership (DSM, MIP, and DSLC) also positively impact TPD. It was also concluded that all three dimensions of PIL are part and parcel of the school principal's role as instructional leader. The findings of this study have broader implications for understanding the complex dynamics between educational leadership and professional development, serving as a foundation for future research in this emerging field. The significance of this research paper lies in its ability to inform and guide school leaders, policymakers, and teacher education programs on the strategic deployment of resources and the implementation of targeted professional development initiatives, thereby amplifying the effectiveness of principals' instructional leadership and promoting a more professionally empowered teaching workforce, ultimately leading to improved educational outcomes of students.

Recommendations

Based on the results, this study presents the following recommendations for further research. The interplay between PIL and TPD reveals that PIL is crucial for fostering professional growth among teachers in the modern educational landscape. The school principal needs to focus on managerial competencies and enhancing their instructional leadership behaviors. This study's result stresses the school principal's training to amplify their instructional leadership behaviors. By implementing a well-structured professional learning activity, school principals can significantly improve the effectiveness of instructional leadership, leading to a more effective teaching-learning process with measurable outcomes. Future researchers should replicate this study to differentiate the impact of high and lower PIL on TPD. Moreover, future studies should investigate potential moderators, such as self-control, academic emotional regulation skills, and digital literacy skills, which may influence the relationship between PIL and TPD. It was also recommended to investigate the mediating effect of TPD between PIL and students' academic performance.

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