

# The Impact of Teachers Collaboration and Principal Leadership on Teacher effectiveness through multiple dimensions of Self-Efficacy: An analysis through Structural Equation Modelling Approach

Muhammad Sagheem<sup>1\*</sup>, Nasr Ullah Jan<sup>2</sup>, Tayyaba Zia<sup>3</sup>

## ABSTRACT

This study investigates the influence of teacher collaboration and principal leadership on teacher effectiveness through multiple dimensions of teacher self-efficacy in public secondary schools in Peshawar, Pakistan. Using a cross-sectional survey design, 150 teachers & 220 Pupils total 370 participants across 25 government schools has been approached for questionnaire distribution, employing simple random sampling. Teacher self-efficacy was assessed through the Teachers' Sense of Efficacy Scale, while student perceptions were used to assess teacher effectiveness using a Rating Scale. Principal leadership and teacher collaboration were also measured using established scales. Partial Least Squares Structural Equation Modeling (PLS-SEM) was utilized for data analysis. Results revealed that both variables highly influenced teacher self-efficacy, which in turn strongly predicted teacher effectiveness. However, measurement concerns were noted in the Teacher Effectiveness construct, indicating a need for refinement. The study highlights the crucial role of fostering collaboration and leadership in enhancing teacher effectiveness, especially in resource-constrained environments. Limitations include the cross-sectional design and regional sampling scope. Future research should employ longitudinal methods and broader samples to strengthen generalizability and causal inferences.

**Keywords:** Teacher Collaboration; Principal Leadership; Teacher Self-Efficacy; Teacher Effectiveness; Secondary Public Schools; Khyber Pakhtunkhwa.

## 1. INTRODUCTION

According to Yunus et al. (2024), school teachers play a critical role in shaping children's thinking during their early developmental years. In the context of Pakistan, not only is there a shortage of teachers, but there is also a notable deficit in professionally competent educators (UNESCO, 2006). It is necessary to guarantee

<sup>1</sup> PhD Scholar, Department of Management Sciences, Qurtuba University of Science and Information Technology, Peshawar.

<sup>2</sup> MPhil in Management Sciences, Department of Management Sciences, Qurtuba University of Science and Technology, Peshawar.

<sup>3</sup> Lecturer Sociology HED, Yanshan University Qinhuangdao HEbei China

\*Corresponding author's E-mail: [muhammadsagheem@gmail.com](mailto:muhammadsagheem@gmail.com)

This is an open-access article. Available Online: 23-02-2026

DOI: <https://doi.org/10.24312/ucp-jbp.03.02.724>

high-quality education since the Pakistani Constitution guarantees the "Right to Education," and educators are among the most valuable resources for achieving this goal (Hassan, A., & Khan, M. M. A, 2024; Kaur and Singh, 2013). Numerous studies have shown that student progress is directly impacted by the efficiency of teachers (Kraft, M. A., & Falken, G. T, 2023; Heck, 2009). The ability of a teacher to support students' academic, social, and emotional development is known as teacher effectiveness. Simply put, it refers to a teacher's effectiveness in instructing and assisting students in achieving their goals. Stronge (2007) defines teacher effectiveness as the capacity of an educator to support student learning and success in the classroom through their behaviors, knowledge, and abilities. Nonetheless, teacher effectiveness is a complicated phenomenon that merits more investigation (Taylor & Thion, 2023; Cheng, 1996). While research in the Western world has concentrated on "what" makes a teacher effective (Good, 1979; McBer, 2000), there are, at most, few studies looking at "how" to make teaching more effective. Furthermore, self-report metrics for teacher effectiveness were used in studies looking into efficacy. The current study uses Bandura's "Self-efficacy" theory (1977) to investigate whether instructors' self-efficacy or belief in one's own talents is a key component of their efficacy and effectiveness. The self-confidence of an educator in their own potential to instruct pupils while leading the classroom is known as teacher self-efficacy. Simply put, it refers to a teacher's feeling confident in their capacity to assist pupils' learning and deal with difficulties in the classroom. When applied to teachers, self-efficacy displays their trust in their ability to teach. Bandura (1997) defines self-efficacy as believing an individual's capacity in order to formulate and implement the required strategies to manage scenarios. The study makes an argument that self-efficacy significantly affects teacher effectiveness using student assessments of that effectiveness. Three factors make Pakistan a suitable research location for this study. First, according to the 2017 Census of Pakistan, 29.5% within the community is below the age of 14, and education is seen as the most important factor for future development (Prachee Sehgal Ranjeet et al., 2017; Rao et al., 2004). According to studies, there is an urgent need to improve Pakistani teachers' efficacy (Javaid, M. A., et al., 2024; Sindhi and Shah, 2013). Second, Pakistan has a student-teacher ratio of 26, which is much greater than that of advanced countries like the United States. Therefore, the progress of society depends on the efficacy of teachers. Third, there are few studies that have tried to look at teacher effectiveness outside of the American setting (Azam and Kingdon, 2013). Therefore, in terms of the Pakistani educational setting, it is essential to comprehend the elements that contribute to teacher effectiveness.

## **2. LITERATURE REVIEW**

### **2.1 Relationship between Teacher Self-efficacy and Teacher Effectiveness**

According to Becenti (2009), Numerous scholars have examined teacher effectiveness from a variety of angles. Effective teachers are able to use research

methods and curriculum implementation to improve and maintain student performance. Teacher self-efficacy is one element that is connected to effectiveness. (Coladarci et al., 1997) reported that the self-worth of a teacher can be seen via the instructor's belief that he or she actually has the capability of such classroom guidance that one maintains Choice for oneself with regard to the role of education. Research suggests that pupil knowledge was influenced by teacher efficacy (Javaid, M. A., et al., 2024).

According to research, Numerous psychological, cognitive, and behavioral changes are predicted by self-worth as a teacher, including academic success (Calik et al., 2012), satisfaction with work, feelings of exhaustion, engagement, and safeguarding against employment burnout and stress (Shwarzer and Hallum, 2008). Association between self-efficacy and instructional features was discovered by Holzberger et al. (2013), who also established a causal association between teachers' self-efficacy as well as the quality of their instruction. However, few studies that analyze the teacher efficacy from the viewpoint of the recipients, or pupils. According to Toland and De Ayala (2005), Teacher effectiveness is determined by how well teachers impart course material, facilitate relationships between teachers and students, and control students' learning. According to this study, the three components of teacher effectiveness have a constructive connection with teacher self-efficacy.

**Hypothesis 1 (a):** *There is a significant relationship between teacher self-efficacy and the quality of course information delivery.*

**Hypothesis 1 (b):** *Teacher self-efficacy plays a significant role in shaping how teachers facilitate interactions with students.*

**Hypothesis 1 (c):** *Teacher self-efficacy has a significant effect on teachers' role in regulating students' learning.*

## **2.2 Relationship among Team Work, Administrative Leadership, Teacher self-efficacy and Teacher Effectiveness**

Research indicates that teacher collaboration improves teaching quality and protects against uncertainties and difficulties associated with technical or instructional practice (Jackson and Bruegmann, 2009). Beatty (2000) discovered that secondary school teachers' opinions of themselves and their work changed as a result of their multidisciplinary teamwork. According to Leiberman (2000), teacher networking and collaboration aid in raising students' academic achievement. In their research of teacher work groups, Conley et al. (2004) discovered that effective interpersonal processes were essential to enhancing instruction and learning. According to the findings of Jackson and Bruegmann (2009), teachers learn best at

the point when they're the least strengthened members of a group, and pupils benefit from improvements in the observable traits of their teachers.

Weathers (2009) pointed out that teacher satisfaction and morale are impacted by helpful leadership, group education, caring relationships, friendly environments, as well as common personal habits. According to Duyar et al. (2013), teacher self-efficacy was predicted by certain elements of principal leadership and teacher collaboration in the workplace. Favorable feedback may also have a favorable impact on a teacher's internal motivation and self-evaluated capability, according to cognitive assessment theory (Gagne and Deci, 2005). The peer group is obviously one of the sources of this input. Therefore, any compliments from colleagues are likely to modify the tutor's opinion of her particular abilities. Conversely, instructors who work alone feel bad about themselves (McGuire, 2011). Hence, we proposed that:

**Hypothesis 2:** *Collaboration has a major effect on teacher self-efficacy.*

Enhancing self-efficacy beliefs is another important function of the school principal. According to Barber and Meyerson (2007), competent school administrators work with teachers to improve the school's performance. Research indicates that school leadership has a major impact on school culture (Leithwood, 2005) and that values are a significant factor in workers' self-esteem (Ngang et al., 2011). According to Blasé & Blasé (1999), a study on the effects of principals' daily instructional leadership Responsive actions of educators, and sense of safekeeping are all positively impacted by the recommendations made by administrators. Hipp (1996) used in-depth interviews to examine the connection between teachers' performance and the transformational leadership style of the administrator. The study found a substantial relationship between general teaching efficacy as well as teacher effectiveness and leadership behaviors: modelling acts, motivating cluster goals, and offering conditional incentives. Additionally, Walker and Slear (2011) discovered that both teacher effectiveness and teaching efficacy were substantially correlated with leadership behaviors. So, it is assumed that,

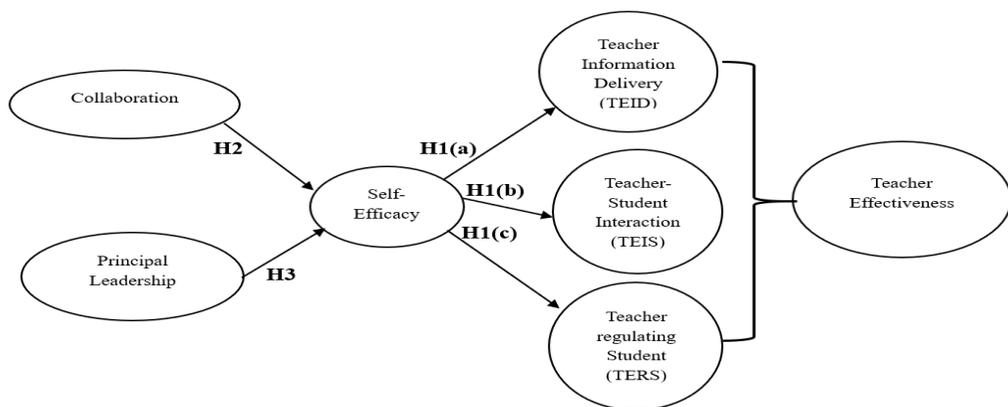
**Hypothesis 3:** *Principal leadership has a major effect on teacher self-efficacy.*

### 2.3 Self-Efficacy Theory

Bandura's Self-Efficacy theory (1977) explains that people's belief in their own ability to succeed is called self-efficacy. Which strongly influences how they think, feel, and act. When individuals believe they can achieve a goal, they are more motivated, persistent, and confident in their efforts. Bandura identified four main sources that shape self-efficacy: mastery experiences (past successes), vicarious experiences (observing others succeed), verbal persuasion (encouragement from others), and emotional and physiological states (how someone feels physically or emotionally in a situation). In this context, when teachers work together

(collaboration) and receive strong support and guidance from school leaders (principal leadership), it can increase their self-efficacy. For example, successful teamwork (mastery experience), seeing other teachers succeed (vicarious experience), encouragement from principals and peers (verbal persuasion), and a positive school environment (emotional support) all help teachers feel more capable. As a result, higher teacher self-efficacy can lead to improved teaching practices and overall teacher effectiveness. Thus, collaboration and leadership play a key role in boosting teachers' belief in themselves, which positively impacts their performance in the classroom.

## 2.4 Conceptual framework of the study:



Source: Prachee et al., (2017)

**Figure 1** Framework

## 3. METHODOLOGY

### 3.1 Data Collection and Sampling

The study relied on survey data collection, and a cluster sampling strategy was utilized because of administrative restrictions, set class groups, and limited researcher access. Creswell and Creswell (2018) pointed out that simple random sampling is challenging to do in school surveys since they frequently depend on groups that occur naturally (such as intact groups or available schools). Students in grades nine and ten had no trouble understanding the claims on their own and had no trouble filling out the survey. So, the researchers sought out ninth and tenth-graders to take part in the study. Researchers surveyed 150 educators and 220 pupils from 25 public schools in the Peshawar Urban and Rural areas to compile their findings. The population of the study is 370; this population is also considered the sample size of the study. Despite the fact that a cross-sectional study design was utilized. The researcher personally distributed questionnaires at each of the participating schools after receiving their consent to conduct the study. Tutors and their respective students

were surveyed separately. Students had to fill out the survey alone, away from their teachers, and they were told up front that their answers would remain anonymous. The results were consistent with previous practices, whereby supervisors provided data for the predictor and subordinates for the criteria (Herold and Fields, 2004).

### **3.2 variables measurement**

Effective teachers were perceived as measured by employing the shortened scale established by Toland et al. (2005). Teachers' belief in their own abilities was assessed by 24-item questionnaire scale established by (Tschannen Moran et al., 2001) that is tridimensional in nature, including, 'Teacher Efficacy for Reflective Practice Scale (TERS) Measure teachers confidence in self-reflection and improving their teaching', while second one is 'Teacher efficacy for instructional delivery (TEIF) assesses teachers belief in their ability to deliver lessons effectively' and lastly is 'Teacher efficacy for instructional strategies (TEIS) evaluates how confident teachers are in using different teaching methods'. A scale created by Wylie & Hodgen (2010) was used to measure the leadership of the principal. An instrument that quantified how teachers were seen to work together was the shortened version of "Teacher Collaboration Scale" developed by Goddard et al. (2007). All the variables were measured by Partial Least Squares Structural Equation Modeling (PLS-SEM) is a powerful procedure particularly suited for estimating complicated and exploratory models. It is robust in handling data that violate normality and multivariate assumptions, making it highly flexible in various research contexts. PLS-SEM does not need large sample sizes and carries out well even with small datasets. According to Hair et al. (2021), sample adequacy in PLS-SEM can be justified using the 10-times rule or power analysis. In this study, the largest number of indicators pointing to a construct and the maximum number of structural paths did not exceed the minimum sample requirement. With 370 participants, the sample size exceeds the typical threshold for medium effect sizes at 80% statistical power (Cohen, 1992), making it sufficient for reliable SEM estimation. Therefore, although probability-based random sampling was not feasible, the sample size and modeling approach are appropriate and aligned with recommended PLS-SEM practices. This makes it ideal for early-stage theory development and predictive modeling. As highlighted by Hair et al. (2021), PLS-SEM has become increasingly popular in fields such as social sciences, business, and marketing research.

## **4. ANALYSIS AND RESULTS**

### **4.1 Measurement Model**

The reliability and validity of the constructs were assessed using factor loadings, Cronbach's Alpha (CA), Composite Construct Reliability (CCR), and Average Variance Extracted (AVE). For the Teacher Collaboration construct, the CA (0.767) and CCR (0.787) both exceeded the minimum threshold of 0.70, indicating acceptable reliability. The AVE of 0.541 is above the recommended 0.50 cutoff,

confirming adequate convergent validity. However, the factor loadings for Teacher Collaboration indicate that Item 2 (0.385) and Item 3 (0.360) fall below the acceptable 0.50 threshold. According to Hair et al. (2019), items with loadings below 0.50 contribute minimally to explaining the latent construct and may reflect poor conceptual alignment or respondent misunderstanding. In this study, the lower loadings may be attributed to participants' inconsistent responses or limited engagement with these specific collaboration practices, which weakens their contribution to the construct. Therefore, these items could be considered for revision or removal to enhance construct clarity. For the Principal Leadership construct, the Cronbach's Alpha (0.699) and Composite Reliability (0.704) marginally meet the recommended 0.70 threshold (Hair et al., 2019). While the AVE (0.576) indicates adequate convergent validity, Item 5 shows a factor loading of 0.410, suggesting it may not adequately represent the underlying leadership dimension. Weak loadings of this nature often signal poor item–construct correspondence or contextual irrelevance (Kline, 2016). This item may therefore reduce measurement precision and warrants further refinement. In contrast, Teacher Self-Efficacy displays strong psychometric properties. With Cronbach's Alpha of 0.899, Composite Reliability of 0.936, and AVE of 0.829, all values exceed recommended criteria, confirming excellent reliability and convergent validity (Bandura, 1997; Hair et al., 2019). The high factor loadings of TEIF (0.935), TEIS (0.875), and TERS (0.920) further affirm that these indicators strongly reflect teachers' sense of capability in performing professional tasks. For Teacher Effectiveness, the Cronbach's Alpha (0.630) and Composite Reliability (0.644) fall below the commonly accepted 0.70 cutoff, indicating insufficient internal consistency. Although the AVE (0.562) is marginally acceptable, four of the five items show weak loadings below 0.60—particularly Item 1 (0.247), Item 2 (0.340), and Item 4 (0.272). Low loadings of this magnitude generally indicate that the items do not adequately capture the theoretical construct (Hair et al., 2019; Kline, 2016). Only Item 5 (0.911) demonstrates strong measurement strength, but its dominance may distort construct representation, suggesting that the construct requires substantial revision or reconsideration. In summary, while Teacher Self-Efficacy is a robust construct, Teacher Effectiveness requires significant improvement. Teacher Collaboration and Principal Leadership show moderate reliability but include weak items that should be reconsidered for better model fit.

**Table 1** *Measurement Model Evaluation (Factor Loadings, CA, CCR, and AVE).*

Items	Factor Loading	CA	CCR	AVE
Teacher Collaboration		0.767	0.787	0.541
Item 1	0.801			
Item 2	0.385			

Item 3	0.360			
Item 4	0.683			
Principal Leadership		0.699	0.704	0.576
Item 1	0.848			
Item 2	0.620			
Item 3	0.673			
Item 4	0.733			
Item 5	0.410			
Teacher Self-Efficacy		0.899	0.936	0.829
TEIF	0.935			
TEIS	0.875			
TERS	0.920			
Teacher Effectiveness		0.630	0.644	0.562
Item 1	0.247			
Item 2	0.340			
Item 3	0.586			
Item 4	0.272			
Item 5	0.911			

## 4.2 Structural Model

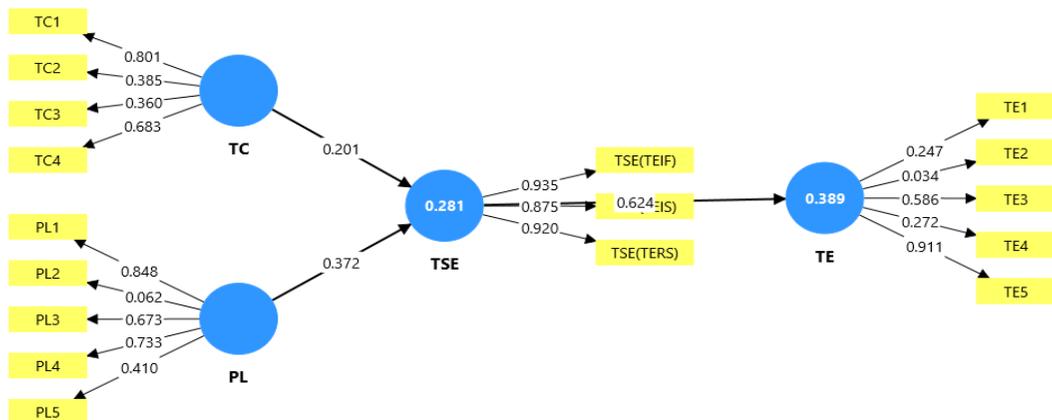
The path from Teacher Collaboration (TC) to Teacher Self-Efficacy (TSE) yielded a standardized path coefficient ( $\beta$ ) of 0.201, indicating a positive but relatively modest influence. The corresponding  $f^2$  value of 0.30 suggests a moderate effect, as argued by Cohen's (1988) benchmarks (0.02 = small, 0.15 = medium, 0.35 = large). This indicates that TC makes a meaningful contribution to explaining TSE. The VIF of 1.878 is less than the critical threshold of 5.0, showing no multicollinearity issues (Hair et al., 2021). The relationship between Principal Leadership (PL) and Teacher Self-Efficacy (TSE) shows a stronger path coefficient ( $\beta = 0.372$ ) compared to TC, implying a more substantial direct effect. However, the  $f^2$  value of 0.103 is just above the small-effect threshold, suggesting that while PL has a significant impact, its unique contribution to explaining variance in TSE is relatively small. The VIF remains acceptable at 1.878, further confirming that multicollinearity is not a concern. Lastly, the effect of (TSE) on Teacher Effectiveness (TE) is both statistically and practically significant, with a high path coefficient ( $\beta = 0.624$ ) and a large effect size ( $f^2 = 0.637$ ). This indicates that TSE plays a crucial role in predicting TE,

accounting for a substantial portion of its variance. The  $R^2$  value of 0.389 for TE demonstrates a moderate level of explained variance, meaning that approximately 39% of the variability in Teacher Effectiveness is accounted for by Teacher Self-Efficacy. The VIF of 1.000 confirms the absence of collinearity.

In summary, the structural model demonstrates strong relationships, particularly between TSE and TE, which is supported by a high  $\beta$  and large  $f^2$ . Both TC and PL contribute to TSE, but PL shows a stronger direct effect, while TC contributes more in terms of effect size. All VIF values are within acceptable limits, indicating that the model is free from multicollinearity issues, thus meeting the standards recommended by Hair et al. (2021) and Fornell & Larcker (1981).

**Table 2 Hypothesis Testing**

Variables	$\beta$	$R^2$	$f^2$	VIF
Decision				
TC -> TSE Supported	0.201	0.281	0.30	1.878
PL -> TSE Supported	0.372	0.281	0.103	1.878
TSE -> TE Supported	0.624	0.389	0.637	1.000



**Figure 2 Study Structural Model**

## 5. CONCLUSION AND FUTURE RESEARCH DIRECTION

According to the study's findings, principals' leadership as well as teacher collaboration can boost teachers' confidence in their abilities and their performance in the classroom. In line with earlier research (Ashton, 1984; wang et al., 2017), this study confirms and establishes the association between teacher self-efficacy &

teacher effectiveness. There is a dearth of literature on "how" to improve teachers' self-efficacy, despite the fact that prior research has demonstrated that teachers' self-efficacy affects their effectiveness. The study's findings highlight the importance of principal leadership and teacher collaboration in shaping teachers' perceptions of their own abilities in the classroom. The research on teacher effectiveness is advanced by the results, which are based on the self-efficacy theory (Zhang, X., & Zhou, Y., 2022; Bandura, 1986). These results show that there is a positive correlation between teachers' self-efficacy and three aspects of their effectiveness: the way they deliver instruction, their role in interaction with pupils, and their ability to regulate pupils' education. Additionally, this impact is shown when comparing pupil ratings of professors to the more common self-report data. Schools should prioritize principal leadership, teacher collaboration, and raising teachers' self-efficacy. This will help instructors become more effective in the classroom. It is critical for educational institutions to seek out and promote teacher cooperation opportunities. According to Friend and Cook (2009) Finding the time to collaborate is the largest problem that teachers have when it comes to working with peers. Time slots in school schedules can be set aside specifically to recognize instructors for working together and to encourage others to do the same. Collaboration does not develop by itself, by way of organizational directives or pressure from peers, but depends on dedicated effort on behalf of every person to a shared target, requires particular attention to interpersonal abilities and needs everyone involved to retain parity throughout their interaction, Friend (2000). Thus, it is critical that educators be persuaded of the value of cooperation and actively participate in team projects. It is clear from this study that principals have a significant impact on raising teachers' sense of self-efficacy and, by extension, their effectiveness in the classroom. When schools are struggling with low motivation among instructors and self-efficacy, the principal's role in offering support becomes more important. This help might come in the form of physical resources, incentives, purpose setting, or deploying teachers for training. The nation's future depends on its teachers, so it's crucial to do all we can to make sure they're effective and have a significant impact on student learning. In terms of lesson delivery, student engagement, and learning regulation, the study found that teachers with high levels of self-efficacy were more effective. Consequently, a teacher's efficacy can be greatly improved by focusing on boosting his or her self-efficacy. Collaboration amongst teachers and strong leadership from principals are two low-cost strategies that can have a significant influence on teacher effectiveness in Pakistan, a country with limited school funding and infrastructure. Pakistan has never before conducted a study of its type. In particular, Khyber Pakhtunkhwa has tried to measure teacher effectiveness using three distinct aspects based on student ratings. This study differs from others in that it does not rely on student achievement or teachers' self-ratings, neither of which is guaranteed to be an accurate indicator of teacher effectiveness. Ultimately, the goal of this study is to help schools find ways to make their teachers more effective. In addition, schools are likely to seek out and cultivate opportunities for teacher collaboration, with increased

participation from school leadership resulting in maximum student learning, because this study highlights the significance of collaboration as well as principal leadership in influencing teacher self-efficacy.

## **5.2 Limitations & Future Research Direction**

Despite offering valuable insights, the study is not without its constraints. First of all, since data was only collected at one moment in time, it is not possible to draw any conclusions about cause and effect from a cross-sectional study. Longitudinal studies would provide stronger evidence of the temporal relationships among teacher collaboration, leadership, self-efficacy, and effectiveness. Secondly, issues with construct validity were evident in the measurement model, particularly within the Teacher Effectiveness construct, where several items demonstrated low factor loadings, indicating potential problems with how the concept was captured through student evaluations. This weak measurement may have influenced the reliability of findings related to teacher performance. Thirdly, the sample was geographically limited to 25 public schools in urban and rural Peshawar, which may affect the generalizability of the results to other regions, educational settings, or private institutions across Pakistan or beyond.

In light of these constraints, numerous directions for further studies are recommended. One key area involves the development and refinement of measurement instruments, especially for constructs like Teacher Effectiveness and Principal Leadership, to ensure greater reliability and validity in future applications. Secondly, longitudinal or experimental research designs should be employed to better understand how teacher collaboration and principal leadership contribute to changes in self-efficacy and effectiveness over time. This would help identify causality and track developmental trends. Finally, future research should consider expanding the demographic and contextual scope by including diverse school types, regions, and participant backgrounds, as well as integrating potential moderating variables such as gender, teaching experience, or socio-economic status to enrich the understanding of the factors influencing teacher outcomes in varied educational contexts.

## **REFERENCES**

- Ashton, P. (1984). Teacher efficacy: A motivational paradigm for effective teacher education. *Journal of Teacher Education*, 35(5), 28–32.
- Azam, M., & Kingdon, G. G. (2013). *Assessing teacher quality in India: The Society of Labor Economists*. <http://www.solejole.org/14289.pdf> (Accessed June 20, 2014)
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.

- Bandura, A. (1986). *Social foundations of thought and action*. Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Barber, M. E., & Meyerson, D. (2007). *The gendering of school leadership: Reconstructing the principalship*. Stanford Educational Leadership Institute.
- Beatty, R. B. (2000). Teachers leading their own professional growth: Self-directed reflection and collaboration and changes in perception of self and work in secondary school teachers. *Journal of In-Service Education*, 26(1), 73–97.
- Becenti, C. J. (2009). *Is there a relationship between the level of professional learning community attainment, teacher effectiveness, and student achievement?* (Doctoral dissertation, Arizona State University). ProQuest Dissertations and Theses: The Humanities and Social Sciences Collection.
- Blasé, J., & Blasé, J. (1999). Principals' instructional leadership and teacher development: Teachers' perspectives. *Educational Administration Quarterly*, 35(3), 349–378.
- Çalık, T., Sezgin, F., Kavgacı, H., & Kılınç, A. Ç. (2012). Examination of relationships between instructional leadership of school principals and self-efficacy of teachers and collective teacher efficacy. *Educational Sciences: Theory and Practice*, 12(4), 2498–2504.
- Campbell, R. J., Kyriakides, L., Muijs, R. D., & Robinson, W. (2003). Differential teacher effectiveness: Towards a model for research and teacher appraisal. *Oxford Review of Education*, 29(3), 347–362.
- Cheng, Y. C. (1996). Total teacher effectiveness: New conception and improvement. *International Journal of Educational Management*, 10(6), 7–17.
- Coladarci, T., & Breton, W. A. (1997). Teacher efficacy, supervision, and the special education resource-room teacher. *The Journal of Educational Research*, 90(4), 230–239.
- Conley, S., Fauske, J., & Pounder, D. G. (2004). Teacher work group effectiveness. *Educational Administration Quarterly*, 40(5), 663–703.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Thousand Oaks, CA: SAGE Publications.
- Duyar, I., Gumus, S., & Bellibas, M. S. (2013). Multilevel analysis of teacher work attitudes: The influence of principal leadership and teacher collaboration. *International Journal of Educational Management*, 27(7), 700–719.

- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Friend, M., & Cook, L. (2009). *Interactions: Collaboration skills for school professionals* (6th ed.). Prentice Hall.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331–362.
- Goddard, Y. L., Goddard, R. D., & Tschannen-Moran, M. (2007). A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record*, 109(4), 877–896.
- Good, T. L. (1979). Teacher effectiveness in the elementary school. *Journal of Teacher Education*, 30(2), 52–64.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis*. Pearson.
- Hassan, A., & Khan, M. M. A. (2024). “Free and Compulsory Education as Fundamental Right: A Critical Analysis of Article 25-A of the Constitution of the Islamic Republic of Pakistan, 1973.” *Journal of Religious and Social Studies*, 4(1), 14–28
- Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2021). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, 12(3), 100392.
- Heck, R. H. (2009). Teacher effectiveness and student achievement: Investigating a multilevel cross-classified model. *Journal of Educational Administration*, 47(2), 227–249.
- Hermida, R. C., Calvo, C., Ayala, D. E., Fernández, J. R., Covelo, M., Mojón, A., & López, J. E. (2005). Treatment of non-dipper hypertension with bedtime administration of valsartan. *Journal of Hypertension*, 23(10), 1913–1922.
- Hipp, K. A. (1996, April). *Teacher efficacy: Influence of principal leadership behavior*. Paper presented at the Annual Meeting of the American Educational Research Association, New York. <http://files.eric.ed.gov/fulltext/ED396409.pdf>
- Holzberger, D., Philipp, A., & Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. *Journal of*

*Educational Psychology*. Advance online publication.  
<https://doi.org/10.1037/a0032198>

- Jackson, C. K., & Bruegmann, E. (2009). Teaching students and teaching each other: The importance of peer learning for teachers. *American Economic Journal: Applied Economics*, 1(4), 85–108.
- Javaid, M. A., Raheem, M. A., & Ahmad, G. (2024). *Head Teachers' Leadership Practices and Teachers' Self-Efficacy at the Elementary Level: A Correlational Study*. *Journal of Development and Social Sciences*, 5(4), 01–09. [https://doi.org/10.47205/jdss.2024\(5-IV\)01](https://doi.org/10.47205/jdss.2024(5-IV)01)
- Kaur, A., & Singh, M. (2013). Teacher: The backbone of quality education. *Indian Streams Research Journal*, 3(5), 1–4.
- Kraft, M. A., & Falken, G. T. (2023). *The Relationship Between Teacher Effectiveness and Student Achievement: A Meta-Analytic Review*. *Educational Research Review*, 38, 100510.
- Knowles, T., & Brown, D. F. (2000). *What every middle school teacher should know*. Heinemann.
- Leithwood, K. (2005). Understanding successful principal leadership: Progress on a broken front. *Journal of Educational Administration*, 43(6), 619–629.
- Leithwood, K. A. (1993). *The nature of leadership*. Year 2000 Research Project, Ministry of Education.
- Lieberman, A. (2000). Networks as learning communities: Shaping the future of teacher development. *Journal of Teacher Education*, 51(3), 221–227.
- McBer, H. (2000). *A model of teacher effectiveness*. Department for Education and Employment.
- McGuire, B. D. (2011). *Exploring the influence of teacher collaboration on teacher self-efficacy: A single case study of a charter high school*. ProQuest LLC.
- McLaughlin, M. W., & Talbert, J. E. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement*. Teachers College Press.
- Ngang, T. K. (2011). The effect of transformational leadership on school culture in Male's primary schools, Maldives. *Procedia - Social and Behavioral Sciences*, 30, 2575–2580.
- Pandey, S. (2006). Para teacher scheme and quality education for all in India: Policy perspectives and challenges for school effectiveness. *Journal of Education for Teaching*, 32(3), 319–334.

- Prachee Sehgal Ranjeet Nambudiri SUSHANTA KUMAR MISHRA, (2017)," Teacher effectiveness through Self-Efficacy, Collaboration and Principal Leadership ", *International Journal of Educational Management*, Vol. 31 Iss 4 pp.
- Rajput, J. S., & Walia, K. (1998). Assessing teacher effectiveness in India: Overview and critical appraisal. *Prospects*, 28(1), 135–150.
- Rao, V. V., Lakshmi, V. V., & Krishna, V. V. (2004). *Education in India* (D. B. Rao, Ed.). Sonali Publications.
- Raudenbush, S. W., Rowan, B., & Cheong, Y. F. (1992). Contextual effects on the self-perceived efficacy of high school teachers. *Sociology of Education*, 65(2), 150–167.
- Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. *Applied Psychology: An International Review*, 57, 152–171. [http://userpage.fu-berlin.de/~health/self/seteacher\\_2008.pdf](http://userpage.fu-berlin.de/~health/self/seteacher_2008.pdf)
- Sehgal, P., Nambudiri, R., & Mishra, S. K. (2017). Teacher effectiveness through self-efficacy, collaboration, and principal leadership. *International Journal of Educational Management*, 31(4), 505–517.
- Sheng, Y. P., Pearson, M., & Crosby, L. (2003). Organizational culture and employees' computer self-efficacy: An empirical study. *Information Resources Management Journal*, 16(3), 42–58.
- Sindhi, S., & Shah, A. R. (2013). An urgent need to increase teacher effectiveness in India. *The Tibet Journal*, 3(4), 115.
- Skaalvik, E. M., & Skaalvik, S. (2008). Teacher self-efficacy: Conceptual analysis and relations with teacher burnout and perceived school context. In H. W. Marsh, R. Craven, & D. M. McInerney (Eds.), *Self-processes, learning, and enabling human potential: Dynamic new approaches* (pp. 223–247). Information Age Publishing.
- Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports*, 114(1), 68–77.
- Stronge, J. H., Ward, T. J., Tucker, P. D., & Hindman, J. L. (2007). What is the relationship between teacher quality and student achievement? An exploratory study. *Journal of Personnel Evaluation in Education*, 20(3), 165–184.

- Toland, M. D., & De Ayala, R. J. (2005). A multilevel factor analysis of students' evaluations of teaching. *Educational and Psychological Measurement, 65*(2), 272–296.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*(7), 783–805.
- Taylor, S., & Thion, S. (2023). *How has teaching effectiveness been conceptualized? Questioning the consistency between definition and measure. Frontiers in Education, 8*, Article 1253622. <https://doi.org/10.3389/educ.2023.1253622>
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*(2), 202–248.
- UNESCO Institute for Statistics. (2006). *Teachers and educational quality: Monitoring global needs for 2015* (Vol. 253). UNESCO Institute for Statistics.
- Walker, J., & Slear, S. (2011). The impact of principal leadership behaviors on the efficacy of new and experienced middle school teachers. *NASSP Bulletin, 95*(1), 46–64.
- Wang, L. Y., Li, J. Y., Tan, L. S., & Lee, L. (2017). Contextualizing teacher efficacy in a high-performing system: A research agenda. *British Journal of Educational Studies, 65*(3), 385–403.
- Weathers, S. R. (2009). *A study to identify the components of professional learning communities that correlate with teacher efficacy, satisfaction, and morale* (Unpublished master's thesis). Georgia Southern University. <http://digitalcommons.georgiasouthern.edu>
- Wylie, C., & Hodgen, E. (2010). *NZCER 2010 primary and intermediate schools national survey*. New Zealand Council for Educational Research.
- Yunus, S., & Munir, M. F. (2024). *Teachers' Role in Preschoolers' Development*. *Advance Social Science Archive Journal, 3*(01), 615–619
- Zhang, X., & Zhou, Y. (2022). *How does teacher-perceived principal leadership affect teacher self-efficacy between different teaching experiences through collaboration in China? A multilevel structural equation model analysis based on the threshold*. *Frontiers in Psychology*.