

# EXPLORING HOW CHANGE LEADERSHIP INFLUENCES INSTRUCTIONAL LEADERSHIP EFFECTS ON SCHOOL CULTURE AND TEACHERS' TEACHING PERFORMANCE IN PESANTREN EDUCATION SETTINGS IN INDONESIA: A MODERATED-MEDIATION ANALYSIS

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## ABSTRACT

As an instructional leader, the principal is instrumental in facilitating the adjustment to the more advanced school environment by supporting teachers and students in their endeavors. The present study investigates the moderated mediation model of how change leadership impacts instructional leadership effects on school culture and teachers' teaching performance. To this end, 459 junior high school teachers from 39 pesantren in Indonesia were surveyed, and the collected data were then examined with factor analysis and Hayes' (2013) bootstrapping technique. The results of the analysis indicate that the principal's instructional leadership has a direct and indirect effect on teachers' teaching performance through school culture. Furthermore, the findings suggest that when the professional relationship between teachers and their principals is characterized by higher change leadership, the indirect effect of the principal's instructional leadership on teachers' teaching performance through school culture is greater. This study provides evidence that principals' instructional leadership is a collaborative process as opposed to a top-down leadership model.

## KEYWORDS

**Instructional leadership, change leadership, school culture, teachers' teaching performance, pesantren, Indonesia**

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## Highlights

- Instructional leadership directly and indirectly improves teachers' teaching performance via school culture.
- Change leadership strengthens the positive impact of instructional leadership on teaching performance.
- The study confirms school culture mediates, and change leadership moderates, the instructional leadership effects.
- Instructional leadership in pesantren contexts functions best as a relational, collaborative process.

## INTRODUCTION

Several studies have provided increasingly persuasive evidence to education policymakers about the ways and scope in which principal leadership contributes to teachers' teaching performance (Heck & Hallinger, 2014; Sebastian & Allensworth, 2012; Sultoni & Gunawan, 2023). Moreover,

studies have demonstrated that the effect of principal leadership is particularly influential in schools facing adverse circumstances, suggesting that leadership is the most important factor for schools in challenging conditions (Duke & Salmonowicz, 2010; Wiyono et al., 2019). On the other hand, instructional leadership, a leadership model that emphasizes functions directly related

to teaching and learning (Murphy, 1988), is instrumental in achieving promising results for school performance (Marks & Printy, 2003; Sumarsono et al., 2019).

Leithwood and Louis (2011) revealed that the primary duty of a school principal is to provide instructional leadership and school management to ensure that quality of teacher instruction and educational equity are prioritized as primary goals. This is deemed essential for a school to organize, prioritize, and sustain teacher teaching and learning to create equitable learning opportunities for all students. Studies on instructionally effective schools have consistently demonstrated that principals must assume a proactive role in instructional leadership and school management (Bossert et al., 1982; Mehdinezhad & Sardarzhahi, 2015). Even more, such research has suggested that this can have a profoundly positive impact on student outcomes (Devine et al., 2013; Gunawan et al., 2020).

Indeed, scholars have well-documented the challenges associated with the application of instructional leadership in education policy across various contexts in the literature examining the impact of principal leadership on teaching and learning (Nguyen et al., 2017; Pan et al., 2015; Sumintono et al., 2019). However, the construct of instructional leadership has emerged as a prominent concept in Western cultures (Hallinger & Leithwood, 1998). In many school systems, principal leadership behaviors are shaped by sociocultural norms. Therefore, principals' instructional leadership should not be taken for granted (Fromm et al., 2016). With this caveat, the current study examines the impact of principal's instructional leadership constructs on teachers' teaching performance in *pesantren* education settings in Indonesia.

The current study is particularly important in two distinct realms. First, policymakers, particularly in Indonesia and generally around the world, are becoming increasingly interested in developing reliable procedures to evaluate instructional leadership for purposes related to principal performance appraisal, leadership training programs for principals, induction programs for new principals, and evaluation of principal policy implementation. Second, this study shows that empirical research-based evidence on principals' instructional leadership can be structured for local use as well as cross-cultural and country comparisons. In essence, the current study seeks to replicate the construct of instructional leadership that originated in Western culture and be applied to *pesantren* education settings in Indonesia characterized by Islamic culture. This dual contribution offers insights to scholars and policymakers on how instructional leadership can be adopted for research and policy-oriented use in the world's diverse educational contexts.

## THEORY AND HYPOTHESIS DEVELOPMENT

### Instructional Leadership

Instructional leadership has been defined by Sheppard (1996) as the actions of school leaders directly related to teacher instruction, aiming to establish a learning climate and support teachers' professional learning (Hsieh et al., 2023a; S. Liu & Hallinger, 2018). In other words, the target of instructional leaders' work is the quality of instructional delivery with teachers and students at the center (Juma et al., 2021). Hallinger

et al. (2015) provided a comprehensive conceptual framework to investigate instructional leadership, which incorporates three distinct dimensions: articulating a school mission and vision, managing the instructional program, and cultivating a positive learning climate.

This study uses the conceptual model of instructional leadership proposed by Bafadal et al. (2018), which consists of six dimensions: visioning of learning, visioning of an excellent school, learning culture, learning environment, promoting the school committee program for instruction, and supporting instructional success. Visioning of learning refers to the principal's behavior in formulating the vision of learning. Visioning of an excellent school refers to the principal's behavior in formulating the vision of the school's excellent program in learning. Learning culture refers to the principal's ability to create a learning-centered culture within an organization, which is achieved by changing how learning and teaching are conducted, thus stimulating a new learning atmosphere. Learning environment refers to the principal's capacity to foster an atmosphere conducive to learning by providing an environment that encourages and supports student growth. Promoting the school committee program for instruction refers to the principal's behavior of gaining school committee support for learning effectiveness. Supporting instructional success refers to the principal's efforts to assist teachers in ensuring the successful implementation of the learning plan.

### Instructional Leadership and Teachers' Teaching Performance

Literature has shown that principal leadership influences teachers' classroom practices (Özdemir, 2020; Pietsch & Tulowitzki, 2017). We expect instructional leadership to positively affect teachers' teaching performance. Instructional leadership emphasizes principals' efforts to create a work environment that provides conditions for teachers to develop their teaching performance (Atalay et al., 2019). From this perspective, successful leadership is a multidimensional process centered on the leader's capacity to advance teachers' supervision, guidance, and training to provide classroom resources (Sindhvad et al., 2020).

Teacher teaching performance, defined as the ability of teachers to effectively carry out their professional duties (i.e., teaching students in the classroom), is manifested in four dimensions: lesson planning, implementing learning, evaluating teaching, and follow-up program (Kusumaningrum et al., 2019). The lesson plan is a detailed outline of the teacher's objectives and methods of instruction for a course of study, typically including specific goals, content, activities, and assessment criteria used to facilitate learning. Implementing learning is the process of interaction between teachers and students in the classroom with subject matter, delivery methods, and learning strategies. Evaluating teaching refers to assessing teaching, which involves collecting data to inform decisions that can improve the efficacy of the teaching-learning environment, ensure that the outcomes are reliable and valid, and provide guidance for future development. A follow-up program refers to an activity undertaken to follow up on a specific activity from the evaluation results.

Halverson and Clifford (2013) reported that principals who demonstrated instructional leader behaviors positively improved teachers' teaching quality. Using structural equation modeling, Bellibaş et al. (2021) reported that instructional leadership has a positive relationship with teachers' instructional practices. Their findings were empirically supported by Nurabadi, Irianto, et al. (2021), who noted a significant effect of principals' instructional leadership on teacher performance. Hence, we propose the first hypothesis as follows.

**Hypothesis 1 (H1):** Instructional leadership positively affects teachers' teaching performance.

## **School Culture as a Mediator Between Instructional Leadership and Teachers' Teaching Performance**

**Instructional leadership and school culture.** School culture, defined as the beliefs, norms, and expectations that influence how teachers work, communicate, and behave with each other in completing instructional tasks (Sumarsono & Kusumaningrum, 2018), is manifested in five dimensions: behavioral guidelines, cultural inheritance, problem-solving guidelines, culture of responsibility, and innovation culture. Behavioral guidelines refer to a set of standards that all teachers accept to set policies at school. Cultural inheritance is an effort to store and transmit the information owned by the school through communication and teaching. Problem-solving guidelines refer to step-by-step guidelines for solving problems and making decisions. The culture of responsibility refers to the conditions under which teachers are responsible for completing tasks, working together to achieve goals, and solving problems. Innovation culture refers to teachers' creative thinking in developing new and improved services, products, and teaching processes.

We expect instructional leadership to have a positive effect on school culture. Yukl (2012) asserts leaders have a strong effect on organizational culture. Şahin's (2011b) findings on 157 urban elementary schools in Turkey showed that instructional leadership has a strong relationship with school culture. A recent study conducted by Kovačević et al. (2023) in Bosnia and Herzegovina concluded that principal leadership has a positive relationship with school culture. Thus, we propose the following second hypothesis.

**Hypothesis 2 (H2):** Instructional leadership positively affects school culture.

**School culture and teachers' teaching performance.** Teachers' teaching performance tends to improve when there is a strong impetus from a school culture where teachers believe and agree that the school aims to achieve learning (Paucar, 2014). In line with this, Engels et al. (2008) reported that school culture drives the learning and teaching process conducted by teachers in the classroom. Results obtained by Şahin (2011a) concluded that a positive school culture increases teacher collaboration and maintains teacher performance in teaching students. We thus propose the third hypothesis, which is as follows:

**Hypothesis 3 (H3):** School culture positively affects teachers' teaching performance.

**The mediating role of school culture.** Previous research has demonstrated the role of school culture as a mediator of the relationship between principals' leadership and teachers' work

outcomes (Kalkan et al., 2020; Lee, 2011; Y. Liu et al., 2021). Bozkurt et al. (2021) found that school culture, promoted by leadership, served as a mediator in the relationship between leadership and teachers' collective efficacy. Burhanuddin et al. (2019) identified a mediation effect of school culture on the relationship between principals' leadership and student academic culture. This study proposes that instructional leadership predicts school culture, which in turn influences teachers' teaching performance. Thus, the following is our fourth hypothesis.

**Hypothesis 4 (H4):** School culture mediates the relationship between instructional leadership and teachers' teaching performance.

## **The Moderating Role of Change Leadership**

Maintaining teachers' teaching performance in increasingly complex and evolving educational settings is an effective measure of instructional management (Andriningrum et al., 2020, 2022; Qurbani et al., 2022) because, through teaching performance, teachers get feedback on instructional quality. Change leadership, in this regard, which refers to visioning, empowering, and inspiring teachers and capitalizing on opportunities to realize smarter, faster, and more efficient instructional change (Issah, 2018), might play an important role in teachers' teaching performance.

A professional school culture allows teachers to take an attitude of inquiry, exchange knowledge, and collaborate to develop classroom materials (Schipper et al., 2020). Chen (2017) found that change leadership moderates the relationship between personality traits and motivation mechanisms. In schools with high levels of change leadership, teachers are more likely to design teaching plans, direct their instruction, and act toward achieving instructional goals in accordance with changes in the school curriculum (Nurabadi et al., 2022), thus increasing the likelihood that they will actually maintain their teaching performance. In contrast, if the principal demonstrates a low level of change leadership, teachers may be passive in responding to curriculum changes in the school, completely disengaging from the school's instructional program (Gunawan et al., 2021). Hence, the following is our fifth hypothesis.

**Hypothesis 5 (H5):** Change leadership moderates the relationship between school culture and teachers' teaching performance, creating a stronger relationship when the level of change leadership is higher than when it is low.

In summary, this moderated mediation model (Hayes, 2013), depicted in Figure 1, suggests that instructional leadership has a positive influence on teachers' teaching performance. This indirect connection is contingent on the degree of change leadership. Consequently, we anticipate that the connection between school culture and teachers' teaching performance will be strengthened (or weakened) when the level of change leadership is high (or low). Therefore, our final hypothesis can be stated as follows.

**Hypothesis 6 (H6):** Change leadership moderates the relationship between instructional leadership and teachers' teaching performance, with the mediating effect being comparatively stronger for teachers with a higher level of change leadership and comparatively weaker for those with a lower level. Specifically, this effect is mediated through the school culture.

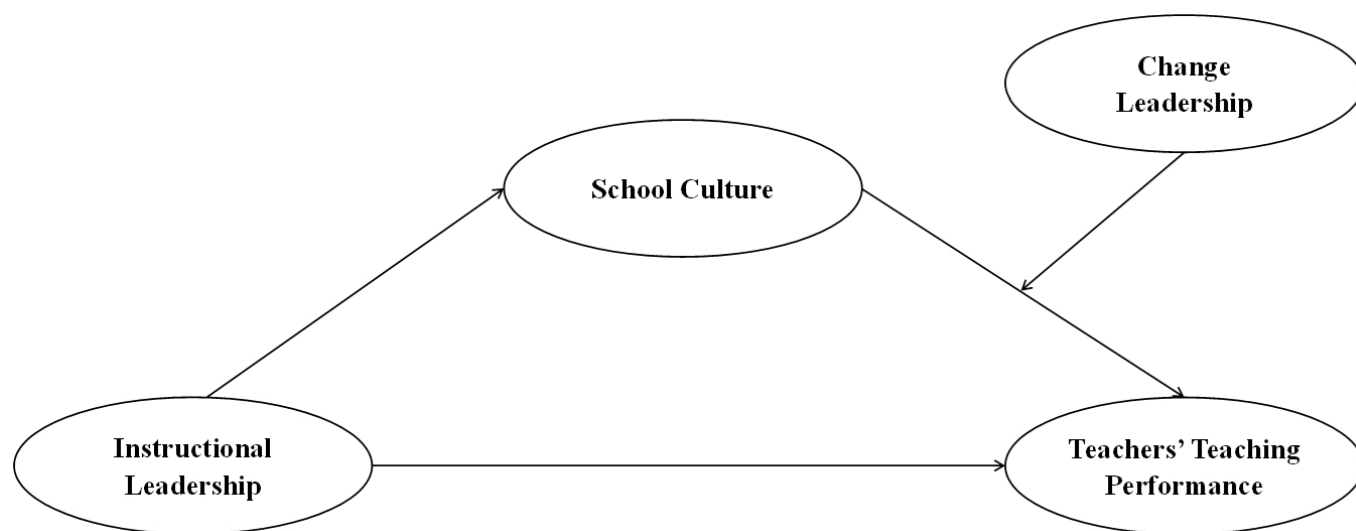


Figure 1: Conceptual research model

## Context of Pesantren Education in Indonesia

*Pesantren* (Islamic boarding school) is a traditional Islamic education system in Indonesia whose origins can be traced back to the early 14th century with the establishment of the Pesantren Ampel Denta in Surabaya, Indonesia, in 1451 (Gunawan et al., 2021). *Pesantren* means a place for *santri* (students) to learn the Qur'an - the holy book of Islam (Ricklefs, 1993). This system has led to the provision of unique Muslim education in a largely gender-segregated setting, although as strict as it is, it depends on the flexibility of the *pesantren* leaders themselves (Srimulyani, 2007). The main purpose of *pesantren* education is to instill that learning is an obligation and a form of devotion to God, prioritize spiritual intelligence, and prepare for life after death (Assa'idi, 2021). In other words, studying in *pesantren* is not to pursue money, power, and worldly glory but to become a person who believes in God (Dhofier, 1999).

However, despite the positive contribution of *pesantren* to national education in building human resources, these educational institutions still receive discriminatory treatment in Indonesian education policy (Badrudin et al., 2017). In response, the Ministry of Religious Affairs (MRA) has recently begun to review organizational management, curriculum, professional practices of teachers, and leadership practices in *pesantren* (Kusumaningrum et al., 2018) ie calculating the mean and standard deviation. Further data is displayed in the frequency description by referring to the stanfive formula, as a reference for defining categories. The teacher empowerment rate is determined by matching the mean by the score interval of the stanfive formula. The results concluded that the level of empowerment of teachers with a mean of 77.25 included in the category is quite good. Based on the analysis of category description of each item it is known that of the 23 items there are 11 items (61.11%). In essence, the MRA has endeavored to create a network of cooperation between teachers and school principals or *pesantren* leaders to facilitate the exchange of information, experiences, and resources. It is hoped that doing so will enable the collective growth of educational and spiritual knowledge.

The policy emphasizes improving student learning outcomes through educational reforms targeting curriculum, student

leadership, principals' leadership practices, and teachers' instructional practices in the classroom (Nurabadi et al., 2020). The MRA has undertaken initiatives to collaborate with universities to organize the *Pendidikan Profesi Guru* (Teacher Professional Education) program. This program aims to ensure that all teachers receive systematic training on the new curriculum and instruction methods. This program is necessary to guarantee that all teachers are adequately prepared to teach using the latest curriculum and instructional methods (MRA, 2022) and, for graduate teachers, a salary allowance.

At the same time, school principals have been subject to increased scrutiny in recent years, with a particular focus on how their leadership impacts teachers' teaching performance and students' learning outcomes (Bafadal et al., 2019). For example, professional orientation, job descriptions, induction programs for new principals, and, in recent years, instructional leadership training have been developed and implemented for school principals to equip them with the necessary skills and knowledge to effectively lead and manage their schools to make the *Merdeka Belajar* (freedom to learn) curriculum policy launched by the government in early 2020 a success (Ahmadi, 2020; Gunawan et al., 2022). The new curriculum for *pesantren* education is centered on the concept of freedom of thought for teachers and students, thus implying a greater responsibility for school principals in leading the reform. To ensure the effectiveness of this reform, collective dialogue between teachers and school principals is essential, as it allows for the recognition of the impact of culture on the teacher-principal relationship in this education system (Prasetyo, 2022). Thus, the present study is pertinent to the extant discourse surrounding *pesantren* education in Indonesia by its incorporation of school culture.

## MATERIALS AND METHODS

### Data Collection

A cross-sectional survey design was used in the current study. Data were collected in December 2021 from a sample of junior high school teachers in 39 *pesantren* in East Java



Province, Indonesia. With the help of the Pesantren Personnel Department, we randomly selected participants and explained the survey procedure in detail. This produced a final sample of 459 teachers. Of the 459 participants, 278 (60.57%) were female, and 181 (39.43%) were male. Our results revealed that 45.53% of participants worked for less than 10 years, 29.41% for 11-20 years, and 25.05% for more than 20 years. Educational levels were distributed at the bachelor's degree (84.75%) and master's degree (15.25%).

## Survey Instruments

The questionnaire used in the survey comprised 82 items adopted from four well-developed scales based on the Indonesian context. In the questionnaire, teachers were asked to indicate their agreement to the statement by responding on a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree". The following describes the scales used for each research construct.

*Instructional leadership.* We adopted the 18-item version scale developed by Bafadal et al. (2018) to measure instructional leadership. There were 4 items on visioning of learning, such as "The principal has an understanding, is able to explain, and is able to equalize the school's vision in the field of learning"; 3 items on visioning of an excellent school, such as "The principal is able to plan the school's flagship program in the field of learning"; 3 items on learning culture, such as "Principals have the ability to demonstrate new learning models to teachers"; 2 items on learning environment, such as "The programs designed by the principal support a conducive learning climate"; 2 items on promoting the school committee program for instruction, such as "The principal involves the school committee in designing the teacher development program"; and 4 items on supporting the instructional success, such as "The principal gives full support to the learning program designed by teachers". The overall reliability coefficient was .876. The reliability coefficients for each dimension were .833, .813, .856, .857, .867, and .864, respectively.

*School culture.* We adopted the 12-item version scale developed by Sumarsono and Kusumaningrum (2018) to measure school culture. There were 3 items on behavioral guidelines, such as "I use the institution's objectives as a direction to carry out the institution's duties"; 2 items on cultural inheritance, such as "I believe the organizational traditions that already exist in my institution will have a positive impact on my work"; 2 items on problem-solving guidelines, such as "Every conflict that arises in the organization can always be resolved by deliberation together"; 2 items on the culture of responsibility, such as "I am responsible for every task that this institution has given"; and 3 items on innovation culture, such as "I have something new and interesting to do to support the achievement of the organization's goals". The overall reliability coefficient was .983. The reliability coefficients for each dimension were .873, .959, .940, .867, and .841, respectively.

*Change leadership.* This paper applied the scale developed by Nurabadi, Irianto, et al. (2021) to measure change leadership. There were 2 items on visioner, such as "Principals are able to design school programs with optimism for a bright

future"; 4 items on inspiring, such as "The principal is able to inspire changes in the school to support the achievement of the school's vision"; 3 items on change strategy, such as "Every change that is launched at school is always supported by careful planning"; 3 items on applied change, such as "The change strategy set by the principal can be implemented by all school members"; and 4 items on evaluating changes, such as "Each change plan designed by the school has indicators that are used to measure the success of the planned changes". The overall reliability coefficient was .885. The reliability coefficients for each dimension were .803, .829, .817, .892, and .841, respectively.

*Teachers' teaching performance.* A four-dimensional scale developed by Kusumaningrum et al. (2019) measured teachers' teaching performance. There were 7 items on the lesson plan, such as "Clear formulation of learning objectives to avoid misinterpretation and ensure stated behaviors are achieved"; 20 items on implementing learning, such as "Deliver material clearly, in accordance with the learning hierarchy and student characteristics"; 2 items on evaluating teaching, such as "Conduct final assessment in accordance with competencies (instructional objectives); and 7 items on follow-up program, such as "Carry out follow-up by giving additional assignments to students as part of remediation". The overall reliability coefficient was .924. The reliability coefficients for each dimension were .837, .848, .994, and .860, respectively.

## Analysis

First, we conducted a descriptive analysis and correlation matrix among the study constructs using IBM SPSS Statistics 24. Second, to check the validity of the study measures, we conducted confirmatory factor analysis (CFA) on all questionnaire items using IBM SPSS Amos Version 24. Table 2 presents model fit indicators and recommended thresholds (Hancock & Mueller, 2013). Third, to test the six hypotheses of this study, we used PROCESS Macro v4.1 (Model 4 and Model 14) developed by Hayes (2013). We tested the models using the bootstrapping technique, which includes sample size constraints by using 5000 bias-corrected bootstrap resamples to overcome possible limitations of small sample size and strengthen the confidence of inference based on sample size.

## RESULTS

### Descriptive Statistics and Correlation Analysis

Table 1 presents descriptive statistics and correlation analyses for four variables. As can be seen, change leadership had the highest mean ( $M = 4.19$ ,  $SD = .42$ ), followed by school culture ( $M = 4.18$ ,  $SD = .34$ ), instructional leadership ( $M = 4.14$ ,  $SD = .40$ ), and teachers' teaching performance ( $M = 4.08$ ,  $SD = .40$ ). Moreover, the correlation analysis revealed a statistically significant positive correlation between instructional leadership and school culture ( $R = .701$ ,  $p < .01$ ), change leadership ( $R = .787$ ,  $p < .01$ ), and teachers' teaching performance ( $R = .839$ ,  $p < .01$ ); school culture was significantly positive correlation with change leadership ( $R = .723$ ,  $p < .01$ ) and teachers' teaching performance ( $R = .731$ ,  $p < .01$ ); and change leadership was significantly positive correlation with teachers' teaching performance ( $R = .859$ ,  $p < .01$ ).

Variables	M	SD	1	2	3	4
1. Instructional leadership	4.14	.40	.864			
2. School culture	4.18	.34	.701**	.964		
3. Change leadership	4.19	.42	.787**	.723**	.945	
4. Teachers' teaching performance	4.08	.40	.839**	.731**	.859**	.886

Note:  $N = 459$ ; \*\* $p < .01$ ; numbers in the diagonal rows are the square roots of the AVE

**Table 1: Means, standards deviations, and correlation**

### CFA Results, Convergent and Discriminant Validity

The results of CFA indicated that the measurement models had an acceptable goodness of fit (Table 2). The scale used was found to have strong convergent validity. First, the factor loadings of every construct were greater than .5. and were statistically significant ( $p < .05$ ). Second, the composite reliability (CR) of each latent variable was found to be greater than .6 (change leadership = .644; school culture = .656; teachers' teaching performance = .687), except for instructional leadership = .599.

Third, the average variance extracted (AVE) from each construct was greater than .5, indicating good reliability (Fornell & Larcker, 1981): instructional leadership = .746; change leadership = .894; school culture = .930; teachers' teaching performance = .786. Overall, these results indicated good convergent validity and discriminant validity was further verified by calculating each construct's AVE square root. Table 1 shows that the square roots of AVE were all greater than the latent variable correlation (Fornell & Larcker, 1981), supporting discriminant validity.

Item	Model fit criteria	Value
$\chi^2/df$	< 3.0	2.554
RMSEA	< .08	.017
RMR	< .08	.034
GFI	> .9	.978
CFI	> .9	.993
NFI	> .9	.952
TLI	> .9	.960
PNFI	> .5	.949

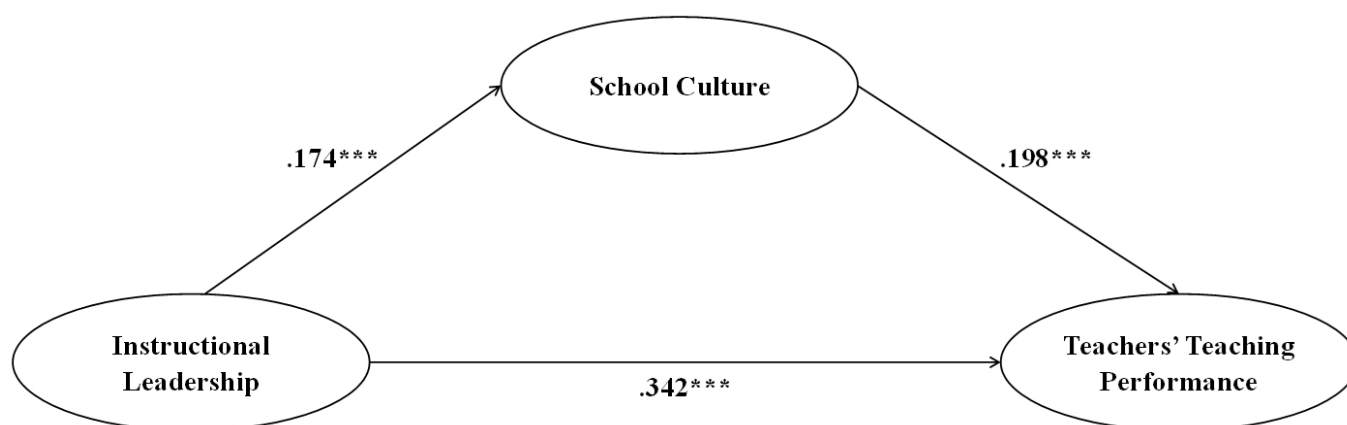
**Table 2: Model fit of the research model**

### Test of Mediation

We employed Hayes' (2013) bootstrapping technique along with SPSS PROCESS v.4.1 to obtain confidence intervals (CIs) by implementing Model 4, a mediation model consisting of three linear regression equations: instructional leadership and teachers' teaching performance, instructional leadership, and school culture; and instructional leadership, school culture, and teachers' teaching performance. As Table 3 shows, instructional leadership could positively predict teachers' teaching performance ( $\beta = .308$ ,  $SE = .060$ ,  $t = 5.167$ ,  $p < .001$ ) and school culture ( $\beta = .174$ ,  $SE = .053$ ,  $t = 3.289$ ,  $p < .001$ ), and school culture could positively

predict teachers' teaching performance ( $\beta = .198$ ,  $SE = .068$ ,  $t = 2.872$ ,  $p < .001$ ). Thus, we confirmed H1, H2, and H3.

The bootstrap 95% confidence interval (CI) for the effect of instructional leadership on teachers' teaching performance and school culture, as indicated by Table 4, did not span zero ( $\beta = .342$ ,  $SE = .060$ , 95% CI = [.227, .459], excluding 0,  $p < .001$ ), indicating that instructional leadership indirectly predicted teachers' teaching performance through school culture (see Figure 2). The direct and mediation effects analysis revealed that 90.06% and 9.94% of the total effects were accounted for, respectively. These results support H4.



Note: \*\*\*  $p < .001$

**Figure 2: The relationship between instructional leadership and teachers' teaching performance through school culture**

Outcome Variables	Independent Variables	$\beta$	SE	t	Bootstrap LLCI	Bootstrap ULCI
Teachers' teaching performance	Instructional leadership	.308***	.060	5.167	.190	.425
School culture	Instructional leadership	.174***	.053	3.289	.070	.278
Teachers' teaching performance	Instructional leadership	.342***	.060	5.783	.227	.459
	School culture	.198***	.068	2.872	.062	.333

Note: \*\*\*  $p < .001$

**Table 3: Mediation model test for school culture**

	Effect	SE	Bootstrap LLCI	Bootstrap ULCI	Relative Effect Size
Total effects	.342	.059	.226	.458	
Direct effects	.308	.060	.190	.425	90.06%
Mediation effects of school culture	.034	.017	.006	.073	9.94%

Note: Bootstrapping was set at 5000 samples

**Table 4: Total, direct, and mediation effects of school culture**

### Test of Moderated Mediation

As Table 5 shows, moderated mediation analysis using Hayes (2013) SPSS PROCESS v.4.1 by employing Model 14 on the moderating effect of change leadership found a significant moderated mediation index ( $b_{\text{modmed}} = .050$ ,  $SE = .035$ , 95%  $CI = [.003, .130]$ , excluding 0). Therefore, the results confirm that the indirect effect of instructional leadership on teachers' teaching performance through school culture was moderated by the level of change leadership, providing support for H5.

This study divided change leadership into three groups (high, medium, and low) based on their mean and standard deviation.

Under different levels of change leadership, the mediating effect of school culture between instructional leadership and teachers' teaching performance is compared (Table 6). Under instructional leadership, the mediating effect with a high level of change leadership (95%  $CI = [.010, .099]$ , excluding 0), a medium level of change leadership (95%  $CI = [.001, .063]$ , excluding 0), and a low level of change leadership (95%  $CI = [.036, .047]$ , excluding 0), is significant. Therefore, H6 is verified. Our results demonstrated a moderating effect of change leadership (Figure 3), whereby an increase in change leadership strengthened the positive influence of school culture on teachers' teaching performance.

Mod	Med	Index	SE	Bootstrap LLCI	Bootstrap ULCI
Change leadership	School culture	.050	.035	.003	.130

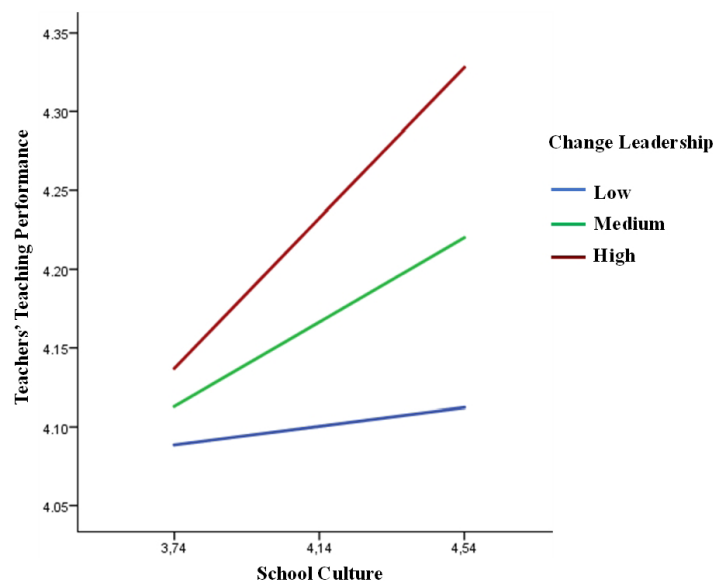
Note: Bootstrapping was set at 5000 samples, Mod = Moderator, Med = Mediator

**Table 5: Index of moderated mediation**

Groups		Moderated mediation effect	SE	Bootstrap LLCI	Bootstrap ULCI
Instructional leadership	Change leadership - high level	.047	.023	.010	.099
	Change leadership - medium level	.027	.016	.001	.063
	Change leadership - low level	.006	.020	.036	.047

Note: Bootstrapping was set at 5000 samples

**Table 6: Conditional indirect effect at values of the moderator**



**Figure 3: Moderating effect of change leadership**

## DISCUSSION AND CONCLUSION

This study examines the moderated-mediated effect of leadership on teachers' teaching performance. It investigated the role of school culture as a mediator and change leadership as a moderator in mediating the effect of instructional leadership on teachers' teaching performance. In this section, we highlight the meaning of the findings. The findings are discussed regarding their implications for research, policy, and practice. Additionally, the limitations of the study are highlighted.

### Interpretation of the Findings

The current study found direct and indirect effects of instructional leadership on teachers' teaching performance. The direct effect of instructional leadership accounts for a much higher proportion (90.06%) than the indirect effect (9.94%) on teachers' teaching performance. This finding echoes the work of Bellibaş et al. (2021), who found that instructional leadership supports teachers' instructional practices. This indicates that instructional leadership could influence teachers' teaching quality and support teaching effectiveness, e.g., school resource allocation, teacher coaching, and protecting instructional time (Al-Mahdy et al., 2022; Hsieh et al., 2023b).

At the same time, the mediation model employed in this study validated significant indirect effects, thereby demonstrating the importance of principals creating beliefs, norms, and expectations to motivate teachers to facilitate improved instructional practices. Moreover, this study focused on school culture. Yet, other research has underscored the significance of other teacher attitudes and values in the process of enhancing instruction, e.g., commitment (Hosseingholizadeh et al., 2020), trust (Karacabey et al., 2022), voice behaviors (Hsieh et al., 2024) and collective efficacy (Bozkurt et al., 2021) as possible constructs through which leadership positively impacts teachers' instructional practices.

The current study's findings become more meaningful when interpreted in the context of previous research that has extended the mediation model to incorporate student learning outcomes. This is evidenced in the four findings reported in the works of Dutta and Sahney (2022), Leithwood et al. (2020), Y. Liu et al. (2022), and Sebastian and Allensworth (2012). First, the four studies reported that principal leadership focused on enhancing teachers' classroom instruction had a notable impact on both instructional quality and student learning outcomes. Second, studies by Leithwood et al. (2020), Dutta and Sahney (2022), Y. Liu et al. (2022), and Sebastian et al. (2016) have highlighted the importance of emotion, school climate, self-efficacy, and professional community as mediators of the impact of principal leadership on teachers' instructional practices. Moreover, the study of Leithwood et al. (2020), which examined a four-path model of leadership effects on student learning outcomes (i.e., rational, emotional, organizational, and family), further confirmed that the rational pathway (i.e., teachers' classroom instruction) has the most prominent direct effect.

This study contributes to the literature on change leadership and instructional leadership by demonstrating teachers' perceived influence of change leadership on the professional relationship with the principal in an Indonesian *pesantren* context. Two main findings emerged from our study. First, we found that change

leadership has a small but statistically significant influence on instructional leadership displayed by *pesantren* principals in Indonesia ( $\beta = .050$ ), thereby substantiating the relevance of change leadership in this context to support the implementation of instructional leadership (Bafadal et al., 2019). Furthermore, our results suggest that when teachers perceive higher levels of change leadership in their professional relationships with their principals, the indirect effect of instructional leadership on teachers' teaching performance through school culture is stronger. This result is consistent with the findings of Thoonen et al. (2011) in the Netherlands, where professional learning activities were the dependent variable. Our results indicate that stronger instructional leadership effects are associated with closer professional relationships between teachers and their principals in contexts characterized by high levels of change leadership.

Second, although the *pesantren* education setting in Indonesia has a hierarchical social culture, the perceived change leadership of the principal perceived by teachers is in the high category ( $M = 4.19$ ). This is quite similar to the findings of Mangulabnan et al. (2021) in the Philippines ( $M = 4.24$ ). This finding is interesting as both countries try to rise by designing school reforms and promoting continuous teacher instruction (Maisyaroh et al., 2021). This could indicate that both countries' norms are changing due to the globalization of education.

Finally, the current study has drawn the following conclusions: First, principals should prioritize improving teachers' instructional quality in the classroom when attempting to promote student learning. Second, principals need to cultivate teachers' positive attitudes, such as commitment, trust, and collective efficacy, to support them in developing their instructional skills and teaching more effectively. Furthermore, this result underlines that instructional leadership by principals is a relational process.

### Implications for Research and Practice

The findings of this study have implications for research. First, this study supports the necessity to further explore the relationship between instructional leadership and teacher teaching performance through quantitative and qualitative research. A notable irony is that, in the focus on student achievement, the importance of the mediating pathway factor of teacher teaching performance, which is subject to the effects of principal leadership, may have been overlooked (Leithwood et al., 2020). Future studies on different national contexts could be enriched and expanded by elucidating the leadership pathway.

Second, we postulate that a research design that places teacher psychological empowerment as a mediator of leadership on teacher teaching performance is of great importance, as it is through teacher teaching performance that schools can most effectively foster and enhance teachers' instructional capabilities. To further refine this research design, we suggest that studies include teacher attitudes (e.g., efficacy, commitment, agency, trust) as mediators. Additionally, contrasting approaches from previous studies could be incorporated to construct new studies and inform the design of future studies (Özdemir, 2020; Thoonen et al., 2011).

Third, this study promotes research on principals' application of instructional leadership in different national contexts, offering



insights into how institutional culture influences behavior (i.e., leadership). This construct requires a collection of findings from different cultural contexts for generalization of results and more trust. This is an important requirement in building a global knowledge base. Various aspects of the current study can be explicitly linked to previous studies conducted, e.g., in China (Zheng et al., 2019), Singapore (Ng et al., 2015), Taiwan (Hsieh et al., 2023b), Japan (Kim & Lee, 2020), Turkey (Karacabey et al., 2022), Oman (Al-Mahdy et al., 2022), United States (Burch, 2007), Chile (Leiva et al., 2017), Kenya (Juma et al., 2021), South Africa (Bush, 2013), Greece (Kaparou, 2015), and Netherlands (Thoonen et al., 2011).

Fourth, this study contributes to the field by providing evidence of the value of using a moderated mediation design to investigate the effects of principal leadership. By adding moderation analysis to the already accepted mediation model, our research offers a comprehensive conceptual and analytical framework for exploring the relationships between principal leadership and teacher instruction.

Finally, our research has implications for education policymakers and practitioners in Indonesia and other communities exploring ways to enhance principal instructional leadership in school settings. Our findings suggest that success in this endeavor requires support for teachers' instructional practices in the classroom, achieved through support, coaching, and access to ongoing professional development opportunities. Specifically, we observed that teachers and principals were recently trained in the *Merdeka Belajar* curriculum series; however, to ensure that this training leads to effective instructional practices, school leaders must continue providing support and coaching to teachers. Furthermore, to ensure these practices are sustained, school leaders must ensure teachers have access to ongoing professional development opportunities. Ultimately, this research supports the need for school leaders to provide instructional leadership to promote effectiveness. Moreover, the induction program for new principals based on mentoring (Nurabadi et al., 2020; Nurabadi, Suhariadi, et al., 2021) should be an entry point for the ministry to promote instructional leadership.

For practitioners, the current study's findings suggest that instructional leadership, when used to strengthen the principal-teacher professional relationship, has a strong positive effect on learning. This is further supported by the moderating effect of change leadership and the mediating effect of school culture. These results are consistent with earlier research, which indicated that principal leadership has a significant impact on various teacher attitudes, such as efficacy (Zheng et al., 2019), commitment (Hosseingholizadeh et al., 2020), trust (Karacabey et al., 2022), and agency (Al-Mahdy et al., 2022). Finally, this research reinforces the notion that instructional leadership can be viewed as a form of relational leadership in which principals are responsible for cultivating a culture of trust and high standards in their schools. Rather than a hierarchical approach to school administration, this form of curriculum and teaching management involves a collaborative effort between principals and teachers, thereby strengthening their professional relationships.

## Limitations and Future Research Directions

This study has several limitations that should be taken into consideration. First, the cross-sectional research design of this study hinders its ability to establish a causal relationship among the variables. As such, the results of this study should be interpreted as merely reflecting the correlations between the constructs investigated. To overcome this limitation, future research should employ a longitudinal research design. Second, this study only evaluated teachers' perceptions of instructional leadership from principals. Thus, future research should expand this investigation's scope by assessing instructional leadership from other sources, such as department heads, teacher leaders, vice principals, or supervisors. Third, the study sample was only teachers from *Pesantren* at the junior high school level, meaning that our findings may not represent the entire population of *Pesantren* teachers in Indonesia. It is suggested that further studies would be better to use a random sampling strategy to select *pesantren* teachers from different levels across Indonesia to ensure the validity of the findings.

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