

Instructional Leadership, Teaching Empowerment, and School Resources: Pathways to Teacher Performance through Self-Efficacy

Hauludin^{1*}. Safuan²

^{1,2}Master of Management Program, Faculty of Economics and Business, Universitas Esa Unggul,
Jl. Arjuna Utara No. 9, Jakarta 11510, Indonesia

*Corresponding Author:

Email: hauludin3@gmail.com

Abstract.

Teacher performance is central to learning quality, yet Indonesian secondary schools continue to face uneven leadership practice, limited resources, and heavy teaching loads. Evidence on whether school resources strengthen teachers' confidence, and on whether workload changes the link between confidence and performance, remains inconsistent. This study examined the effects of instructional leadership, teaching empowerment, and school resources on teacher performance, with teacher self-efficacy as a mediator and teaching workload as a moderator. A quantitative explanatory survey was conducted among 190 teachers of public and private senior high schools (SMA) and vocational high schools (SMK) in Tangerang Regency, Indonesia, selected through purposive sampling. Data were collected with an online questionnaire of 38 five-point Likert items and analyzed using partial least squares structural equation modeling (PLS-SEM) in SmartPLS 4 with 5,000 bootstrap subsamples. Instructional leadership ($\beta = 0.277$, $p = 0.010$) and teaching empowerment ($\beta = 0.467$, $p < 0.001$) had significant positive effects on teacher self-efficacy, whereas school resources did not ($\beta = 0.073$, $p = 0.451$). Teacher self-efficacy was the strongest predictor of teacher performance ($\beta = 0.685$, $p < 0.001$), and instructional leadership also affected performance directly ($\beta = 0.239$, $p = 0.001$). Self-efficacy partially mediated the effect of instructional leadership on performance and transmitted the whole effect of teaching empowerment, for which no direct path was specified. Teaching workload did not moderate the self-efficacy-performance relationship ($\beta = -0.034$, $p = 0.543$). The model explained 57.9% of the variance in self-efficacy and 79.8% in performance. The findings position teacher self-efficacy as the central psychological mechanism linking organizational support to teaching performance and suggest that principals and the district education office would gain more from investing in teacher empowerment and instructional leadership development than in physical facilities alone.

Keywords: Instructional Leadership; Teaching Empowerment; Teacher Self-Efficacy; Teacher Performance and Teaching Workload.

I. INTRODUCTION

The quality of classroom learning depends heavily on what teachers do. The way teachers plan lessons, deliver instruction, and evaluate student progress shapes learning effectiveness and student outcomes [1]. Teacher performance is therefore a key link between school-level conditions and educational attainment: supportive school cultures and work motivation foster the competent teaching associated with better student learning [2], and school leaders raise student results largely by improving the quality of instruction [3, 4]. Performance is also sensitive to working conditions. Research conducted in Indonesia during the COVID-19 pandemic recorded differences in teacher performance across organizational settings [5], and studies in crisis-affected education systems identified the work environment as a decisive factor in how well teachers carry out their duties [6].

The Indonesian context gives this issue practical weight. The 2025 Education Report (*Rapor Pendidikan*) for Banten Province places the learning quality indicator for vocational high schools (SMK) in the moderate category and records a decline relative to 2024; general senior high schools (SMA) are still rated good but have also weakened [7]. Student literacy and numeracy at the SMK level fall in the same moderate band, and the indicator of partnership and alignment between vocational schools and the world of work dropped to moderate in 2025. At the aggregate level, Banten's minimum service standard (SPM) score of 70.18 places the province in the *Tuntas Pratama* tier rather than the highest attainment category [7]. This indicates that education services across the province, including Tangerang Regency, one of the areas with the largest number of secondary education units, still need improvement. A systematic review of school leadership in Indonesia likewise identified limited capacity to lead and manage schools as a persistent problem [8]. Understanding what drives teacher performance in this district is thus a current and measurable problem rather than a purely academic exercise.

Among the organizational levers available to schools, instructional leadership has received the most attention. Unlike leadership that is mainly administrative, it concentrates the principal's effort on setting clear learning goals, providing academic supervision and professional coaching, and monitoring classroom

processes [9–11]. Instructional leadership has repeatedly been associated with teacher performance [12–14] and with professional collaboration among teachers [15], and its influence extends to teachers' digital literacy and general work capability [16]. A meta-analytic structural equation modeling study of 26 studies further showed that principal instructional leadership is related to teacher self-efficacy across educational contexts, partly through collective efficacy [17].

Teaching empowerment refers to teachers' participation in decision making, their professional authority over instructional choices, their opportunities for growth, and the organizational backing that allows them to feel in control of their work [18]. The concept is broader than professional autonomy because it also covers teachers' role in school processes [18, 19]. Empowerment correlates positively with teacher self-efficacy [18], a pattern echoed in research on distributed leadership, teacher autonomy, and collaboration [20, 21].

School resources comprise learning materials, classroom infrastructure and facilities, information and communication technology (ICT), administrative support, and the organizational structures that coordinate teachers' work [22]. Adequate resources ease the practical execution of teaching [2, 22, 23]. Differences in school resources have been linked to student performance [24], and the way organizational structures support teachers matters for their effectiveness [25]. Whether resources also shape teachers' beliefs about their own capability, however, is less clear.

Social cognitive theory explains how such organizational inputs may be translated into performance. It treats self-efficacy, a person's belief in their capability to carry out the actions a task requires, as the psychological conduit through which environmental input affects behavior and work outcomes [26]. Teacher self-efficacy captures teachers' confidence that they can plan, deliver, and manage instruction effectively, including handling classroom difficulties and engaging students [27]. It is a belief about capability rather than actual teaching competence [26], and it accompanies adaptive emotional states [28], lower physiological stress [29], well-being [30], lower burnout [31], organizational citizenship behavior [32], and job satisfaction [33, 34].

The job demands–resources (JD-R) theory complements this view by specifying the conditions under which personal resources operate. Job demands consume time and energy, whereas job and personal resources sustain motivation and performance [35]. Teaching workload, the accumulation of lesson planning, instruction, assessment, administration, coordination, and additional duties beyond teaching hours [36], is a typical job demand that can drain the capacity teachers need to turn confidence into action [37]. Read together, the two theories assign complementary roles: social cognitive theory specifies the mediating pathway through which efficacy beliefs form, whereas JD-R theory positions workload as a boundary condition, a moderator rather than a mediator, that may strengthen or weaken that pathway [22, 35].

The empirical record, however, is uneven. Findings on whether school resources build teacher confidence are mixed and depend heavily on context [22, 24]. Evidence on workload is also unsettled: Jiang et al. [22] reported a significant interaction between self-efficacy and workload in explaining teacher performance, yet related work suggests that demands influence outcomes through stress and support mechanisms rather than acting as a stable moderator [5, 38]. Motivation, professional development, organizational climate, and management practices have also been advanced as explanations of teacher outcomes [37, 39, 40]. In the Indonesian context, Elfira et al. [41] showed that teacher self-efficacy mediates the effect of principals' instructional leadership on teacher performance, but their model did not include empowerment, school resources, or workload. Few studies have tested instructional leadership, teaching empowerment, and school resources simultaneously, together with a mediating psychological mechanism and a moderating job demand, in one structural model, and evidence of this kind from Indonesian SMA and SMK teachers remains scarce.

This study addresses that gap by examining how instructional leadership, teaching empowerment, and school resources shape the performance of SMA and SMK teachers in Tangerang Regency, with teacher self-efficacy as the mediating mechanism and teaching workload as a moderator. In addition to the indirect paths, the model tests the direct effect of instructional leadership on teacher performance and examines whether the self-efficacy–performance link varies across workload levels. Conceptually, the study clarifies

where workload belongs in teacher performance models; empirically, it documents how organizational and psychological factors operate jointly in a district whose education quality indicators are under pressure.

Hypothesis Development

Instructional leadership gives teachers clear pedagogical direction, coaching, and feedback. In social cognitive terms, these practices supply verbal persuasion and facilitate the mastery experiences from which efficacy beliefs grow [26, 42]. Previous studies link principals' instructional leadership and related forms of school leadership to teacher self-efficacy [3, 15, 21, 22], a relationship supported by meta-analytic evidence across contexts [17] and by Indonesian evidence [41].

H1: Instructional leadership has a positive effect on teacher self-efficacy.

Empowerment widens teachers' room for participation, professional authority, and decision making, which strengthens the sense of control and agency at the core of efficacy beliefs [18, 19]. Empirical studies link empowerment and related conditions of autonomy and support to higher teacher self-efficacy [20, 27, 34, 43].

H2: Teaching empowerment has a positive effect on teacher self-efficacy.

Adequate facilities, learning materials, technology, and administrative support smooth the daily execution of teaching, and smoother work experiences should nurture teachers' belief that they can meet instructional standards [2, 22, 23]. Prior studies suggest that resource support strengthens teacher self-efficacy as psychological capital for facing instructional demands [22, 29, 33].

H3: School resources have a positive effect on teacher self-efficacy.

Teachers who trust their own capability persist longer, choose more appropriate strategies, and maintain the quality of their professional work, which converts capability into observable performance [1, 27, 28]. The positive effect of teacher self-efficacy on teacher performance is among the most consistently reported findings in this literature [5, 22, 23, 43].

H4: Teacher self-efficacy has a positive effect on teacher performance.

The strength of that conversion may depend on working conditions. Teaching hours, administrative duties, and additional assignments consume time and energy [36], and heavy demands can limit how far confidence translates into classroom performance [38]. Jiang et al. [22] found that the interaction between self-efficacy and workload significantly explained variance in teacher performance, which motivates testing workload as a moderator rather than a mediator [35].

H5: Teaching workload moderates the effect of teacher self-efficacy on teacher performance.

Instructional leadership may also act on performance without passing through teachers' beliefs, because clear academic direction, measurable work standards, and support for improving practice directly facilitate better work execution [9, 10, 42]. Direct positive relationships between principals' instructional leadership and teacher performance have been documented repeatedly [12–14].

H6: Instructional leadership has a positive effect on teacher performance.

The hypothesized model linking the six constructs is presented in Fig. 1.

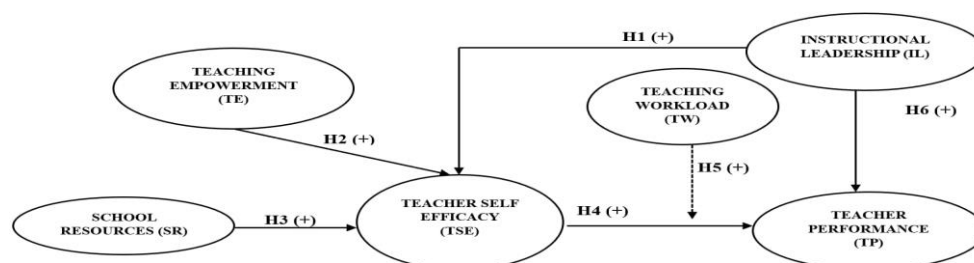


Fig. 1. Research model

II. METHODS

Research Design

This study used a quantitative survey with an explanatory design, because the research question concerns relationships among latent constructs measured through teachers' numerical responses. Partial least

squares structural equation modeling (PLS-SEM) was chosen as the analytical framework because it can estimate direct, mediating, and moderating effects within a single structural model [44]. Hypotheses were evaluated at a significance level of 0.05.

Population and Sample

The population comprised teachers of public and private SMA and SMK in Tangerang Regency, Banten Province, Indonesia. Purposive sampling was applied with three criteria: (1) actively teaching at an SMA or SMK in the regency during the 2025/2026 academic year; (2) at least one year of service at the current school, long enough to form grounded judgments about school leadership, empowerment, resources, self-efficacy, workload, and performance; and (3) voluntary willingness to complete the questionnaire. Sample size followed the PLS-SEM guideline of five to ten observations per indicator [45]. With 38 items, the minimum at five observations per indicator was 190 respondents. The questionnaire was administered online through Google Forms from February to July 2026. After data cleaning for completeness and eligibility, 190 valid responses were retained for analysis.

Instruments

All items were adapted from established instruments, translated, and adjusted to the context of SMA and SMK teachers in Tangerang Regency without changing the conceptual meaning of the original items. Instructional leadership was measured with six items adapted from Jiang et al. [22] and Wahab et al. [14], covering goal communication, monitoring of classroom teaching, constructive feedback, encouragement of effective strategies, support for professional development, and promotion of collaboration. Teaching empowerment was measured with six items adapted from Azizifar et al. [18], covering involvement in decisions, authority over teaching methods, opportunities for professional growth, respect for teachers' ideas, influence on school matters, and confidence to take initiative. School resources comprised five items adapted from Jiang et al. [22], covering learning materials, ICT facilities, teaching aids, administrative support, and classroom and school facilities. Teacher self-efficacy was measured with nine items based on the Teacher Sense of Efficacy Scale (TSES) as used by Azizifar et al. [18]. Teaching workload was measured with five items adapted from Jiang et al. [22] and Ujir et al. [36], and teacher performance with seven items adapted from Jiang et al. [22] and Wahab et al. [14]. The full item list is given in Appendix A. Every item used a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Data Analysis

The data were analyzed in SmartPLS 4 in two stages. The measurement (outer) model was assessed through indicator loadings (≥ 0.70), average variance extracted (AVE ≥ 0.50), Cronbach's alpha and composite reliability ($\rho_c \geq 0.70$), and discriminant validity using the heterotrait-monotrait ratio (HTMT < 0.90) and the Fornell-Larcker criterion [45, 46]. Indicator collinearity was checked with outer variance inflation factors (VIF). The structural (inner) model was evaluated through inner VIF, the coefficient of determination (R^2), effect size (f^2) interpreted against Cohen's benchmarks of 0.02, 0.15, and 0.35 for small, medium, and large effects [47], predictive relevance (Q^2) obtained by blindfolding with omission distances of 5 to 9 [44], and overall fit using the standardized root mean square residual (SRMR < 0.08) together with d_{ULS} , d_G , chi-square, and the normed fit index (NFI) [48]. Hypotheses were tested by bootstrapping with 5,000 subsamples and bias-corrected and accelerated (BCa) confidence intervals, which yield more accurate intervals when Likert-type data depart from normality [45, 49]. A path was considered significant when $t > 1.96$, $p < 0.05$, and the 95% confidence interval excluded zero. The mediating role of teacher self-efficacy was examined through bootstrapped specific indirect effects, and the type of mediation was classified by comparing the significance of the indirect and direct effects [50, 51]. The moderating role of teaching workload was tested with an interaction term between teacher self-efficacy and teaching workload predicting teacher performance, generated using the two-stage approach in SmartPLS 4, with the main effect of workload on performance also estimated.

III. RESULT AND DISCUSSION

Respondent Profile

All 190 respondents were active teachers at public and private SMA and SMK in Tangerang Regency, a number that exactly meets the minimum sample required for the planned analysis. Their characteristics are summarized in Table 1. Women formed a small majority (54.7%). Most respondents held a bachelor's or professional degree (72.6%), and a further 25.3% held a master's or doctoral degree. Half had taught for more than ten years, and 76.3% worked in public schools.

Table 1. Respondent characteristics (n = 190)

No	Characteristic	Category	Frequency (%)
1	Gender	Male	86 (45.3%)
		Female	104 (54.7%)
2	Age	18–25 years	2 (1.1%)
		26–35 years	71 (37.4%)
		36–45 years	55 (28.9%)
		46–56 years	58 (30.5%)
		≥ 57 years	4 (2.1%)
3	Highest education	Senior high school	2 (1.1%)
		Diploma	2 (1.1%)
		Bachelor/professional degree	138 (72.6%)
		Master/doctorate	48 (25.3%)
4	Teaching tenure	1–3 years	11 (5.8%)
		4–6 years	38 (20.0%)
		7–10 years	46 (24.2%)
		More than 10 years	95 (50.0%)
5	School status	Public	145 (76.3%)
		Private	45 (23.7%)
Total			190 (100%)

Source: Authors' data analysis.

Measurement Model

As shown in Table 2, every indicator loading exceeded 0.70, ranging from 0.844 (TE1) to 0.925 (IL6). AVE values ranged from 0.751 (teaching empowerment) to 0.837 (instructional leadership), all above 0.50, confirming convergent validity. Composite reliability ranged from 0.942 to 0.972 and Cronbach's alpha was at least 0.924 for every construct, indicating strong internal consistency [45]. No indicator had to be removed. Outer VIF values ranged from 2.390 (TW1) to 5.618 (IL6). Two instructional leadership indicators exceeded 5 (IL5 = 5.190; IL6 = 5.618); such values are expected for reflective constructs with highly correlated items and remain below the more lenient bound of 10 [44, 52].

Table 2. Measurement model: loadings, reliability, and convergent validity

Construct	Indicator	Loading	Cronbach's α	CR (ρ_c)	AVE
Instructional Leadership (IL)	IL1	0.914	0.961	0.969	0.837
	IL2	0.902			
	IL3	0.920			
	IL4	0.915			
	IL5	0.912			
	IL6	0.925			
Teaching Empowerment (TE)	TE1	0.844	0.934	0.948	0.751
	TE2	0.869			
	TE3	0.878			
	TE4	0.886			
	TE5	0.879			
	TE6	0.845			
School Resources (SR)	SR1	0.901	0.938	0.953	0.802
	SR2	0.895			
	SR3	0.903			
	SR4	0.900			
	SR5	0.879			
Teacher Self-Efficacy (TSE)	TSE1	0.892	0.967	0.972	0.792

Construct	Indicator	Loading	Cronbach's α	CR (ρ_c)	AVE
Teaching Workload (TW)	TSE2	0.895	0.924	0.942	0.765
	TSE3	0.909			
	TSE4	0.889			
	TSE5	0.881			
	TSE6	0.895			
	TSE7	0.902			
	TSE8	0.863			
	TSE9	0.880			
	TW1	0.863			
	TW2	0.872			
Teacher Performance (TP)	TW3	0.875	0.953	0.962	0.782
	TW4	0.892			
	TW5	0.871			
	TP1	0.855			
	TP2	0.897			
	TP3	0.899			
	TP4	0.900			
	TP5	0.864			
	TP6	0.858			
	TP7	0.914			

Note: thresholds — loading ≥ 0.70 ; α and $\rho_c \geq 0.70$; AVE ≥ 0.50 . Source: Authors' data analysis (SmartPLS 4).

Discriminant validity was examined with both the Fornell–Larcker criterion and HTMT (Table 3). All construct pairs met the HTMT threshold of 0.90 except teacher self-efficacy and teacher performance, whose value of 0.910 slightly exceeded it [46]. This deviation is understandable given the conceptual proximity of the two constructs, since self-efficacy is theoretically the most proximal antecedent of performance [26]. The Fornell–Larcker results support treating them as distinct: the square roots of AVE for teacher self-efficacy (0.890) and teacher performance (0.884) exceed their correlation (0.875). The indicator content also separates efficacy beliefs (“I can ...”) from reported performance behaviors (Appendix A), so both constructs were retained.

Table 3. Discriminant validity: Fornell–Larcker criterion and HTMT

Construct	IL	TE	SR	TSE	TW	TP
IL	0.915	0.785	0.783	0.704	0.040	0.756
TE	0.744	0.867	0.852	0.769	0.145	0.827
SR	0.746	0.798	0.896	0.681	0.080	0.755
TSE	0.680	0.732	0.653	0.890	0.200	0.910
TW	0.022	0.136	0.072	0.195	0.875	0.162
TP	0.724	0.781	0.718	0.875	0.159	0.884

Note: bold diagonal = square root of AVE; below the diagonal = inter-construct correlations (Fornell–Larcker); above the diagonal (italic) = HTMT ratios (threshold 0.90). Source: Authors' data analysis (SmartPLS 4).

Structural Model

Inner VIF values for all predictor paths ranged from 1.090 to 3.211, below the threshold of 5, so structural collinearity was not a concern. Fig. 2 shows the SmartPLS 4 path diagram, with standardized path coefficients on the arrows and R^2 values inside the endogenous constructs. The model explained 57.9% of the variance in teacher self-efficacy, a moderate level, and 79.8% of the variance in teacher performance, a substantial level (Table 4) [45]. Q^2 values of 0.4572 for teacher self-efficacy and 0.6222 for teacher performance, both well above zero, indicate predictive relevance [44]. The SRMR of the estimated model was 0.0527 (saturated model: 0.0421), below the 0.08 cutoff, indicating good fit [48]. The remaining indices for the estimated model were $d_{ULS} = 2.0609$, $d_G = 1.2539$, chi-square = 1238.1602, and NFI = 0.8569; the NFI approaches but does not reach the conventional 0.90 level, and fit indices in PLS-SEM are best treated as supporting rather than decisive evidence of model quality [48].

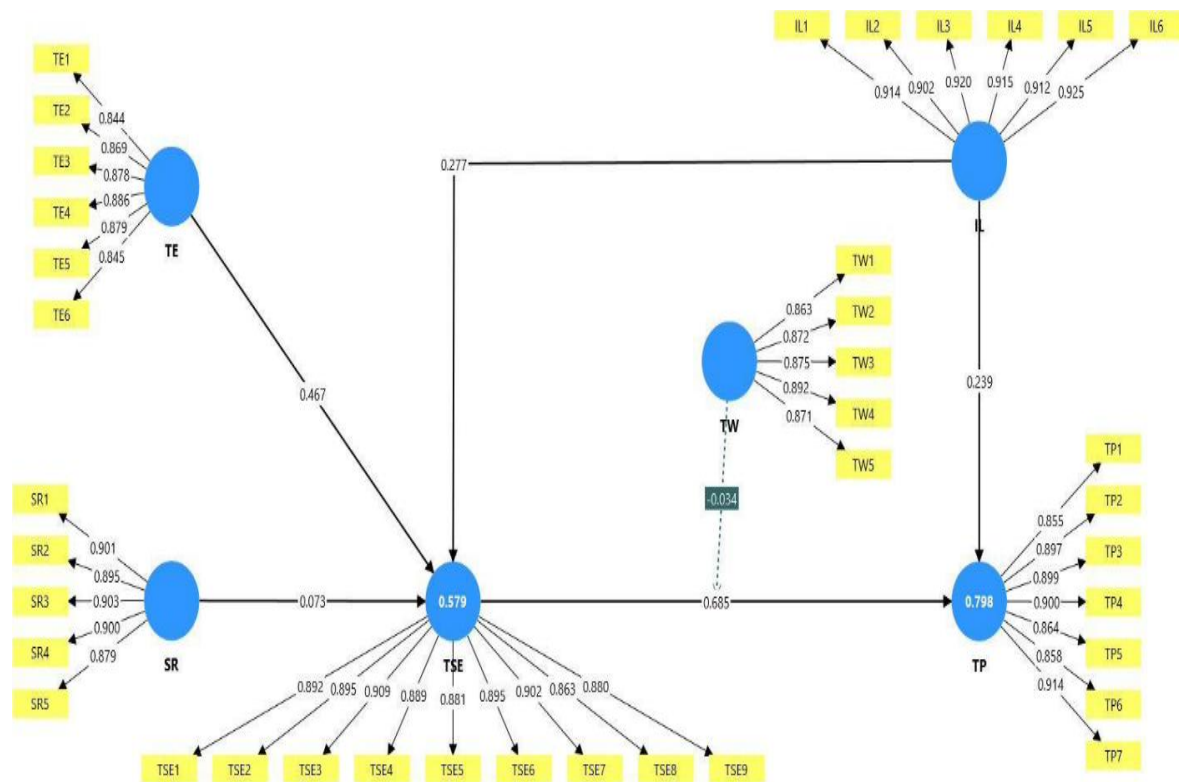


Fig. 2. Inner model output of SmartPLS 4 (standardized path coefficients; R^2 inside the endogenous constructs)

Table 4. Coefficient of determination and predictive relevance

Endogenous construct	R^2	R^2 adjusted	Q^2	Explanatory power (R^2)
Teacher Self-Efficacy (TSE)	0.579	0.572	0.4572	Moderate
Teacher Performance (TP)	0.798	0.794	0.6222	Substantial

Note: $R^2 \geq 0.75$ substantial, ≥ 0.50 moderate, ≥ 0.25 weak; Q^2 from blindfolding ($D = 5-9$), reported in the thesis. Source: Authors' data analysis (SmartPLS 4).

Hypothesis Testing

Table 5 reports the bootstrapped direct effects. Four of the six hypotheses were supported (H1, H2, H4, and H6), whereas H3 and H5 were not. The effect sizes follow the same pattern: the path from teacher self-efficacy to teacher performance was large ($f^2 = 0.952$), teaching empowerment had a medium effect on self-efficacy ($f^2 = 0.163$), both instructional leadership paths had small effects, and the paths for school resources, workload, and the interaction term were negligible ($f^2 \leq 0.005$). The main effect of teaching workload on performance, estimated as part of the moderation test, was not significant ($\beta = 0.020$, $p = 0.588$). Each result is discussed below.

Table 5. Direct effects and hypothesis testing

Hypothesis	Path	β	t	p	95% CI	f^2	Decision
H1	IL $\rightarrow$ TSE	0.277	2.580	0.010	[0.043, 0.458]	0.070	Supported
H2	TE $\rightarrow$ TSE	0.467	3.902	< 0.001	[0.224, 0.698]	0.163	Supported
H3	SR $\rightarrow$ TSE	0.073	0.754	0.451	[-0.105, 0.277]	0.004	Not supported
H4	TSE $\rightarrow$ TP	0.685	8.187	< 0.001	[0.499, 0.826]	0.952	Supported
H5	TW $\times$ TSE $\rightarrow$ TP	-0.034	0.609	0.543	[-0.170, 0.050]	0.005	Not supported
H6	IL $\rightarrow$ TP	0.239	3.336	0.001	[0.086, 0.370]	0.148	Supported
–	TW $\rightarrow$ TP (main effect)	0.020	0.542	0.588	[-0.048, 0.103]	0.002	Not hypothesized

Note: bootstrapping with 5,000 subsamples; significance at $t > 1.96$ and $p < 0.05$; CI = confidence interval from the SmartPLS bootstrapping output. Source: Authors' data analysis (SmartPLS 4).

Instructional leadership and teacher self-efficacy (H1)

Instructional leadership had a significant positive effect on teacher self-efficacy ($\beta = 0.277$, $t = 2.580$, $p = 0.010$; 95% CI [0.043, 0.458]), so H1 was supported. Teachers who experience clearer academic

direction, coaching, and constructive feedback from their principal report greater confidence in their instructional work. In social cognitive terms, supervision and mentoring supply verbal persuasion while creating opportunities for mastery experiences, the main sources of efficacy beliefs [26]. The result agrees with He et al. [9] and Werdiningsih [42], who linked principals' academic direction and supervision to teachers' professional growth and learning quality, with secondary school evidence from Jiang et al. [22] and Gechere et al. [3], and with Indonesian findings that principals' instructional leadership strengthens teacher self-efficacy [41]. Leadership that promotes professional collaboration points the same way, since collegial sharing of strategies reinforces efficacy through social support [15, 21]. The sample context sharpens this reading: with 76.3% of respondents in public schools and half having taught for over a decade, experienced teachers appear to respond to the quality of academic guidance they receive rather than to the mere presence of administrative supervision.

Teaching empowerment and teacher self-efficacy (H2)

Teaching empowerment had the strongest effect on teacher self-efficacy among the three antecedents ($\beta = 0.467$, $t = 3.902$, $p < 0.001$; 95% CI [0.224, 0.698]), supporting H2. The finding is consistent with Gong [20] and Mossaiaie et al. [43], who observed that room for participation, professional authority, and support for instructional decision making raise teachers' efficacy, and with Zakariya and Wardat [34] and Cai et al. [27] on the confidence-building role of mastery experiences and social validation. Empowerment nurtures the sense of ownership and agency that social cognitive theory places at the core of efficacy beliefs [26], and within the JD-R framework it acts as a motivational job resource that builds psychological capital rather than merely easing task execution [35]. The size of this coefficient carries a practical message: since 72.6% of respondents hold at least a bachelor's degree, the teaching force in Tangerang Regency has professional capacity that responds strongly to being trusted with wider instructional discretion.

School resources and teacher self-efficacy (H3)

Although H3 proposed a positive relationship between school resources and teacher self-efficacy, the empirical result did not support this hypothesis ($\beta = 0.073$, $t = 0.754$, $p = 0.451$); the 95% confidence interval [-0.105, 0.277] includes zero and the effect size was negligible ($f^2 = 0.004$). This result departs from Jiang et al. [22], Kanya et al. [23], and Fang and Qi [33], but it is in line with evidence that the link between school-level resources and individual outcomes is unstable across contexts [24, 25]. Two theoretical explanations are plausible. Within JD-R theory, resources are a structural condition that is necessary but not sufficient; their influence on psychological capital may operate through relational mechanisms such as leadership and empowerment rather than directly [33, 35]. From the social cognitive standpoint, efficacy is built mainly from mastery experiences and social persuasion rather than from the availability of physical facilities [26]. JD-R research on teachers likewise found that personal and relational resources, such as adaptability, resilience, and collective efficacy, were the ones related to self-efficacy and engagement [53]. A contextual explanation is also possible. Most respondents taught in public schools, whose basic facilities follow relatively uniform government standards, so perceptions of resource adequacy may be fairly homogeneous and unable to differentiate teachers' efficacy; in this sample, what separated more confident from less confident teachers was the leadership and empowerment they experienced. This explanation remains a conjecture that the present data cannot test directly.

Teacher self-efficacy and teacher performance (H4)

Teacher self-efficacy had a significant positive effect on teacher performance ($\beta = 0.685$, $t = 8.187$, $p < 0.001$; 95% CI [0.499, 0.826]), the strongest path in the model, supporting H4. This reinforces consistent reports from Jiang et al. [22], Kanya et al. [23], and Puspitasari et al. [1], matches the Indonesian evidence of Elfira et al. [41], and echoes findings that efficacy accompanies job satisfaction and positive work behavior [32, 34]. Efficacy beliefs energize, direct, and sustain goal-oriented behavior [26]: confident teachers persist longer, select better strategies, and keep professional standards steady, converting capacity into performance. Within JD-R theory, efficacy also serves as a personal resource that protects work quality under demands [22, 35]. Given the predominance of long-serving respondents, strengthening this psychological capital appears to be the main lever for raising teaching performance in the district. Because the HTMT value

between the two constructs slightly exceeded 0.90 and both were measured by self-report, the magnitude of this path should nevertheless be interpreted with some caution.

The moderating role of teaching workload (H5)

The interaction between teacher self-efficacy and teaching workload was not significant ($\beta = -0.034$, $t = 0.609$, $p = 0.543$; 95% CI $[-0.170, 0.050]$; $f^2 = 0.005$), so H5 was not supported. A simple slope inspection showed a slight weakening of the self-efficacy–performance relationship as workload rose, from 0.719 at low workload (-1 SD) to 0.650 at high workload ($+1$ SD), but this difference is not statistically significant, so workload cannot be said to strengthen or weaken the relationship. The result contrasts with Jiang et al. [22], who found the interaction significant. In the present data, the effect of self-efficacy on performance held relatively stable across perceived workload levels [5]. JD-R theory accommodates this outcome: when a personal resource is strong, a buffering effect need not appear, because highly efficacious teachers sustain performance regardless of variation in demands [26, 35]. The workload items also showed moderate average scores with wide variation across teachers, suggesting perceptions too heterogeneous to form a systematic interaction pattern [36]. Well-internalized self-regulation may further protect the self-efficacy–performance link from fluctuations in workload [29, 38], and workload may matter more through other routes, such as stress and burnout, that lie outside the present model [29, 31]. The result therefore does not mean that workload is unimportant; it shows that, in this population, workload did not change how strongly confidence translated into performance.

Instructional leadership and teacher performance (H6)

Instructional leadership also had a significant direct effect on teacher performance ($\beta = 0.239$, $t = 3.336$, $p = 0.001$; 95% CI $[0.086, 0.370]$), supporting H6. This is consistent with He et al. [9], Werdiningsih [42], and Nellitawati et al. [12] on the performance benefits of academic supervision and targeted feedback, with the positive leadership–performance relationships reported by Nurabadi et al. [13] and Wahab et al. [14], and with the direct effect found among Indonesian teachers by Elfira et al. [41]. Leadership focused on learning quality supplies clear academic direction, measurable standards, and support for improving practice, which facilitate performance directly [10, 11]. Together with H1, this gives instructional leadership a dual influence on teacher performance, one immediate and one through self-efficacy. The principal’s position is especially important in public schools, which dominate the sample and whose structures place the principal at the center of instructional quality [9, 22].

The mediating role of teacher self-efficacy

Specific indirect effects are reported in Table 6. The indirect effect of instructional leadership on teacher performance through self-efficacy was significant ($\beta = 0.190$, $t = 2.421$, $p = 0.016$; 95% CI $[0.028, 0.332]$). Because the direct effect was also significant and of the same sign, self-efficacy acts as a complementary partial mediator [51]; the total effect of instructional leadership on performance was 0.429 ($t = 5.698$, $p < 0.001$). The indirect effect of teaching empowerment through self-efficacy was also significant ($\beta = 0.320$, $t = 3.378$, $p = 0.001$; 95% CI $[0.134, 0.510]$). Since the model does not specify a direct path from empowerment to performance, the total effect of empowerment (0.320) equals its indirect effect, so within the tested model the influence of empowerment on performance flows entirely through self-efficacy, which amounts to full (indirect-only) mediation [51]. Because the direct path was fixed at zero rather than estimated, this conclusion rests on the model specification. The indirect path from school resources was not significant ($\beta = 0.050$, $t = 0.767$, $p = 0.443$; 95% CI $[-0.072, 0.186]$), which is consistent with the rejection of H3.

Table 6. Specific indirect, direct, and total effects

Mediation path	Indirect β	t	p	95% CI	Direct β (p)	Total β (p)	Mediation
IL $\rightarrow$ TSE $\rightarrow$ TP	0.190	2.421	0.016	[0.028, 0.332]	0.239 (0.001)	0.429 (< 0.001)	Partial
TE $\rightarrow$ TSE $\rightarrow$ TP	0.320	3.378	0.001	[0.134, 0.510]	Not specified ^a	0.320 (0.001)	Full ^a
SR $\rightarrow$ TSE $\rightarrow$ TP	0.050	0.767	0.443	$[-0.072, 0.186]$	Not specified	0.050 (0.443)	None

Note: Partial = complementary partial mediation (significant indirect and direct effects of the same sign); Full = indirect-only mediation. ^a The model does not include a direct TE $\rightarrow$ TP path, so this

classification holds within the tested model only. Mediation types follow Zhao et al. [51]. Source: Authors' data analysis (SmartPLS 4).

These patterns confirm efficacy beliefs as the bridge that translates organizational support into effective work behavior [26, 33]. They also imply that efforts to raise teacher performance in Tangerang Regency will pay off more when directed at building self-efficacy through leadership and empowerment than at adding physical resources alone [35].

IV. CONCLUSION

This study tested whether instructional leadership, teaching empowerment, and school resources improve teacher performance through teacher self-efficacy, and whether teaching workload moderates that process, among 190 SMA and SMK teachers in Tangerang Regency. Four of six hypotheses were supported. Instructional leadership ($\beta = 0.277$) and teaching empowerment ($\beta = 0.467$) both strengthened teacher self-efficacy, with empowerment as the stronger driver. Self-efficacy was the most powerful predictor of performance ($\beta = 0.685$), and instructional leadership also influenced performance directly ($\beta = 0.239$). School resources had no significant effect on self-efficacy, and workload did not moderate the self-efficacy–performance relationship. Self-efficacy partially mediated the effect of instructional leadership and, within the tested model, fully transmitted the effect of empowerment on performance. The model explained 57.9% of the variance in self-efficacy and 79.8% in performance. Teacher self-efficacy thus functions as the key link between organizational support and teaching performance, which extends the application of social cognitive theory and JD-R theory to Indonesian secondary education.

Several practical steps follow for principals and the Tangerang Regency Education Office. First, priority should go to empowerment: giving teachers genuine participation in instructional decisions, wider professional authority, and trust to innovate in class, for example through subject teacher forums (*Musyawah Guru Mata Pelajaran*, MGMP) that serve as formal channels for joint decisions on teaching strategies. Second, leadership development deserves parallel investment through training in constructive academic supervision, targeted feedback, and pedagogical mentoring, because instructional leadership pays off through two routes at once. Third, budgets should balance the procurement of physical facilities with capacity building, given that facilities alone did not raise teachers' confidence. Fourth, although workload showed no moderating effect, its wide variation across teachers warrants a fairer distribution of additional duties and a transparent recognition system.

The findings should be read in light of several limitations. The cross-sectional design cannot capture changes over time, and self-reported Likert measures are open to common method bias. Purposive sampling in a single regency limits generalization, and the sample was dominated by public school teachers (76.3%), which may limit application to private schools. The unexplained 42.1% of the variance in self-efficacy points to determinants outside the model, which included only one mediator and one moderator. Predictive relevance was assessed through blindfolding (Q^2); confirming this with the PLSpredict procedure to obtain out-of-sample predictive metrics (Q^2_{predict}) would further strengthen the model's predictive validation in future work. Future research could use longitudinal or mixed-method designs, broader samples across regions and levels of schooling, comparisons between public and private schools, additional antecedents of self-efficacy such as collegial collaboration or digital literacy, measures that separate objective from perceived resources and workload, and alternative moderators such as school climate or tenure.

V. ACKNOWLEDGMENTS

The authors thank the senior and vocational high school teachers of Tangerang Regency who volunteered their time as respondents, the school principals who facilitated data collection, and the Master of Management Program, Faculty of Economics and Business, Universitas Esa Unggul, for academic support throughout the research.

APPENDIX A. Measurement Items

Items are the original English statements of the source instruments as documented in the thesis (operational definition of variables); the questionnaire administered to respondents used adapted Indonesian wording. All items were rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Table A1. Measurement items by construct

Code	Item
Instructional Leadership [14, 22]	
IL1	The principal communicates clear teaching goals for this school.
IL2	The principal monitors the quality of classroom teaching.
IL3	The principal provides constructive feedback on my teaching.
IL4	The principal encourages teachers to use effective teaching strategies.
IL5	The principal supports my professional development related to instruction.
IL6	The principal promotes collaboration among teachers to improve teaching.
Teaching Empowerment [18]	
TE1	I am involved in decisions that affect my teaching work.
TE2	I have the authority to choose teaching methods appropriate for my class.
TE3	I have opportunities to develop my professional skills as a teacher.
TE4	My ideas and opinions are respected in my school.
TE5	I can influence important matters related to school teaching and learning.
TE6	I feel confident to take initiative in improving instruction.
School Resources [22]	
SR1	My school provides adequate learning materials (books, worksheets, etc.).
SR2	My school provides sufficient digital/ICT facilities to support teaching.
SR3	I can access teaching aids and equipment when needed.
SR4	My school provides adequate administrative/support staff for teaching tasks.
SR5	The classroom and school facilities support effective teaching.
Teacher Self-Efficacy (TSES) [18]	
TSE1	I can manage disruptive behavior in the classroom.
TSE2	I can create a classroom environment that supports learning.
TSE3	I can keep students engaged during lessons.
TSE4	I can use a variety of teaching strategies to explain difficult concepts.
TSE5	I can assess student learning effectively.
TSE6	I can motivate students who show low interest in learning.
TSE7	I can help students think critically about the subject.
TSE8	I can adapt my teaching to students' different needs.
TSE9	I can maintain students' attention even when the lesson is challenging.
Teaching Workload [22, 36]	
TW1	My teaching hours each week are very high.
TW2	I have too many administrative tasks besides teaching.
TW3	I often work outside official hours to finish teaching-related tasks.
TW4	I have multiple non-teaching duties that reduce my teaching focus.
TW5	The time available is not enough to prepare quality lessons.
Teacher Performance [14, 22]	
TP1	I prepare lesson plans thoroughly before teaching.
TP2	I deliver lessons according to learning objectives and curriculum.
TP3	I use appropriate teaching methods to help students understand.
TP4	I evaluate student learning regularly and fairly.
TP5	I provide feedback to students to improve their learning.
TP6	I complete teaching-related administrative duties on time.
TP7	I continuously improve my teaching quality through reflection and learning.

REFERENCES

- [1] J. Puspitasari, J. Sutarto, S. E. Pramono, Y. Sutopo, *Teacher performance in the 21st century: Examining the roles of leadership, self-efficacy, compensation, and job satisfaction*, *Journal of Ecohumanism*, 3 (7), 2024, pp. 3719–3747. <https://doi.org/10.62754/joe.v3i7.4496>
- [2] O. Amtu, K. Makulua, J. Matital, C. M. Pattiruhu, *Improving student learning outcomes through school culture, work motivation and teacher performance*, *International Journal of Instruction*, 13 (4), 2020, pp. 885–902. <https://doi.org/10.29333/iji.2020.13454a>

- [3] T. Gechere, J. Oumer, T. Ouke, *Influence of principals' instructional leadership and teachers' efficacy on students' performance in secondary schools in the Wolaita Zone, South Ethiopia*, Discover Sustainability, 6 (1), 2025, Article 967. <https://doi.org/10.1007/s43621-025-01797-3>
- [4] U. Mikayilova, G. Alasgarova, N. Peken, *The role of principal and leadership styles in student achievement: Case of post-post-Soviet Azerbaijan*, European Education, 57 (4), 2025, pp. 312–326. <https://doi.org/10.1080/10564934.2025.2559317>
- [5] Ngabiyanto, A. Nurkhin, K. B. Mulyono, I. H. Saputro, D. Pramono, A. P. Y. Utomo, *Teachers' performance during the COVID-19 pandemic in Indonesia: Causality and comparison*, **European Journal of Educational Research**, 12 (2), 2023, pp. 605–621. <https://doi.org/10.12973/eu-jer.12.2.605>
- [6] S. El Achi, N. Jabbour Al Maalouf, H. Barakat, J. L. Mawad, *The impact of transformational leadership and work environment on teachers' performance in crisis-affected educational settings*, Administrative Sciences, 15 (7), 2025, Article 256. <https://doi.org/10.3390/admsci15070256>
- [7] Kementerian Pendidikan Dasar dan Menengah Republik Indonesia, *Rapor Pendidikan Indonesia 2025 Provinsi Banten [Indonesian Education Report 2025, Banten Province]*, 2025. Retrieved September 2025, from <https://raporpendidikan.kemdikbud.go.id/>
- [8] N. T. L. Gaol, *School leadership in Indonesia: A systematic literature review*, Educational Management Administration & Leadership, 51 (4), 2023, pp. 831–848. <https://doi.org/10.1177/17411432211010811>
- [9] P. He, F. Guo, G. A. Abazie, *School principals' instructional leadership as a predictor of teacher's professional development*, **Asian-Pacific Journal of Second and Foreign Language Education**, 9 (1), 2024, Article 63. <https://doi.org/10.1186/s40862-024-00290-0>
- [10] S. Liu, P. Hallinger, *Principal instructional leadership, teacher self-efficacy, and teacher professional learning in China: Testing a mediated-effects model*, Educational Administration Quarterly, 54 (4), 2018, pp. 501–528. <https://doi.org/10.1177/0013161X18769048>
- [11] P. Hallinger, *Leadership for learning: Lessons from 40 years of empirical research*, **Journal of Educational Administration**, 49 (2), 2011, pp. 125–142. <https://doi.org/10.1108/09578231111116699>
- [12] Nellitawati, Ganefri, Rusdinal, Hardianto, M. N. A. Setiawan, S. Ginanjar, Arwildayanto, *The influence of instructional leadership and work commitment on teacher performance*, **Jurnal Cakrawala Pendidikan**, 43 (3), 2024, pp. 546–561. <https://doi.org/10.21831/cp.v43i3.66677>
- [13] A. Nurabadi, J. Irianto, I. Bafadal, Juharyanto, I. Gunawan, M. A. Adha, *The effect of instructional, transformational and spiritual leadership on elementary school teachers' performance and students' achievements*, **Jurnal Cakrawala Pendidikan**, 40 (1), 2021, pp. 17–31. <https://doi.org/10.21831/cp.v40i1.35641>
- [14] J. A. Wahab, A. Z. Mansor, M. Hussin, S. Kumarasamy, *Headmasters' instructional leadership and its relationship with teachers performance*, **Universal Journal of Educational Research**, 8 (11A), 2020, pp. 97–102. <https://doi.org/10.13189/ujer.2020.082112>
- [15] C.-C. Hsieh, Y.-R. Chen, H.-C. Li, *Impact of school leadership on teacher professional collaboration: Evidence from multilevel analysis of Taiwan TALIS 2018*, **Journal of Professional Capital and Community**, 9 (1), 2024, pp. 1–18. <https://doi.org/10.1108/JPCCC-01-2023-0002>
- [16] B. Tongli, Zurweni, S. Martodiryo, M. A. Tuasikal, A. D. Harnoko, A. Rozak, Mulyono, *Investigating the correlation digital literacy, instructional leadership, and intelligence on work performance*, **Journal of Infrastructure, Policy and Development**, 8 (10), 2024, Article 6356. <https://doi.org/10.24294/jipd.v8i10.6356>
- [17] T. Karakose, A. Kardas, S. Kanadlı, T. Tülübaş, B. Yildirim, *How collective efficacy mediates the association between principal instructional leadership and teacher self-efficacy: Findings from a meta-analytic structural equation modeling (MASEM) study*, Behavioral Sciences, 14 (2), 2024, Article 85. <https://doi.org/10.3390/bs14020085>
- [18] A. Azizifar, S. Naghipour, F. Mohamadian, Y. Veisani, F. Cheraghi, S. Aibod, *Investigating the relationship between Iranian EFL teachers' empowerment and their self-efficacy as a consequence for their educational improvement*, **Journal of Education and Health Promotion**, 9, 2020. https://doi.org/10.4103/jehp.jehp_354_19
- [19] N. P. do Carmo, W. F. de Abreu, *Saberes e autonomia docente: Um diálogo entre elementos imprescindíveis à formação do professor [Knowledge and teaching autonomy: A dialogue between comprehensive elements for teacher training]*, Margens, 14 (23), 2020, pp. 27–41. <https://doi.org/10.18542/mri.v14i23.5778>
- [20] J. Gong, *The effects of distributed leadership on teaching innovation in Shanghai, China: The mediating roles of teacher autonomy, teacher collaboration, and teacher self-efficacy*, Frontiers in Psychology, 16, 2025, Article 1562838. <https://doi.org/10.3389/fpsyg.2025.1562838>

- [21] C. Zhang, B. S. Alias, M. N. Nordin, *The effect of distributed leadership on teacher self-efficacy in Mainland China: A systematic review (2019–2025)*, *Environment and Social Psychology*, 10 (9), 2025, pp. 1–18. <https://doi.org/10.59429/esp.v10i9.4133>
- [22] Y. Jiang, M. R. Yusof, M. D. Kasa, *Factors influencing teacher performance in Shanghai high schools in COVID-19 pandemic*, ***International Journal of Evaluation and Research in Education***, 14 (2), 2025, pp. 898–909. <https://doi.org/10.11591/ijere.v14i2.31992>
- [23] N. Kanya, A. B. Fathoni, Z. Ramdani, *Factors affecting teacher performance*, ***International Journal of Evaluation and Research in Education***, 10 (4), 2021, pp. 1462–1468. <https://doi.org/10.11591/ijere.v10i4.21693>
- [24] M. van Hek, G. Kraaykamp, B. Pelzer, *Do schools affect girls' and boys' reading performance differently? A multilevel study on the gendered effects of school resources and school practices*, *School Effectiveness and School Improvement*, 29 (1), 2018, pp. 1–21. <https://doi.org/10.1080/09243453.2017.1382540>
- [25] L. Jiayan, S. K. Rajanthran, Y. Fuyu, X. Qiaochuan, *Impact of hierarchical, horizontal and team-based organisational structures on full time teachers' performance in Chinese secondary schools*, ***International Journal of Education and Practice***, 11 (4), 2023, pp. 897–913. <https://doi.org/10.18488/61.v11i4.3544>
- [26] A. Bandura, *Self-Efficacy: The Exercise of Control*, W.H. Freeman, New York, 1997.
- [27] Y. Cai, L. Wang, Y. Bi, R. Tang, *How can the professional community influence teachers' work engagement? The mediating role of teacher self-efficacy*, *Sustainability*, 14 (16), 2022, Article 10029. <https://doi.org/10.3390/su141610029>
- [28] M. V. Keller, R. Rinas, S. Janke, O. Dickhäuser, M. Dresel, M. Daumiller, *Intertwining self-efficacy, basic psychological need satisfaction, and emotions in higher education teaching: A micro-longitudinal study*, *Social Psychology of Education*, 27 (6), 2024, pp. 3119–3152. <https://doi.org/10.1007/s11218-024-09888-1>
- [29] A.-L. Jögi, A.-M. Aulén, E. Pakarinen, M.-K. Lerkkanen, *Teachers' daily physiological stress and positive affect in relation to their general occupational well-being*, ***British Journal of Educational Psychology***, 93 (1), 2023, pp. 368–385. <https://doi.org/10.1111/bjep.12561>
- [30] G. Shao, *A model of teacher enthusiasm, teacher self-efficacy, grit, and teacher well-being among English as a foreign language teachers*, *Frontiers in Psychology*, 14, 2023, Article 1169824. <https://doi.org/10.3389/fpsyg.2023.1169824>
- [31] M. Song, *Chinese English as foreign language teachers' self-efficacy and motivation as predictors of burnout*, *Frontiers in Psychology*, 13, 2022, Article 899687. <https://doi.org/10.3389/fpsyg.2022.899687>
- [32] Y.-O. Choong, L.-P. Ng, *Shaping teachers' organizational citizenship behavior through self-efficacy and trust in colleagues: Moderating role of collective efficacy*, *BMC Psychology*, 12 (1), 2024, Article 532. <https://doi.org/10.1186/s40359-024-02050-8>
- [33] J. Fang, Z. Qi, *The influence of school climate on teachers' job satisfaction: The mediating role of teachers' self-efficacy*, *PLoS ONE*, 18 (10), 2023, Article e0287555. <https://doi.org/10.1371/journal.pone.0287555>
- [34] Y. F. Zakariya, Y. Wardat, *Job satisfaction of mathematics teachers: An empirical investigation to quantify the contributions of teacher self-efficacy and teacher motivation to teach*, ***Mathematics Education Research Journal***, 36 (4), 2024, pp. 791–813. <https://doi.org/10.1007/s13394-023-00475-9>
- [35] A. B. Bakker, E. Demerouti, *Job demands–resources theory: Taking stock and looking forward*, ***Journal of Occupational Health Psychology***, 22 (3), 2017, pp. 273–285. <https://doi.org/10.1037/ocp0000056>
- [36] H. Ujir, S. F. Salleh, A. S. W. Marzuki, H. F. Hashim, A. A. Alias, *Teaching workload in 21st century higher education learning setting*, ***International Journal of Evaluation and Research in Education***, 9 (1), 2020, pp. 221–226. <https://doi.org/10.11591/ijere.v9i1.20419>
- [37] S. Sariakin, M. Yeni, M. B. Usman, A. S. Mare, M. Munzir, M. Saleh, *Fostering a productive educational environment: The roles of leadership, management practices, and teacher motivation*, *Frontiers in Education*, 10, 2025, Article 1499064. <https://doi.org/10.3389/feduc.2025.1499064>
- [38] M. Li, A. Albattat, *The influence of work-life balance on teacher performance in Zhengzhou, China*, *Frontiers in Psychology*, 16, 2025, Article 1586128. <https://doi.org/10.3389/fpsyg.2025.1586128>
- [39] N. Kholifah, M. Nurtanto, F. Mutohhari, H. Subakti, M. A. Ramadhan, N. W. A. Majid, *The mediating role of motivation and professional development in determining teacher performance in vocational schools*, *Cogent Education*, 11 (1), 2024, Article 2421094. <https://doi.org/10.1080/2331186X.2024.2421094>
- [40] J. Li, C. Sutunyarak, *The role of principals' transformational leadership and kindergarten organizational climate in shaping teachers' work engagement: The mediating effect of teachers' self-efficacy – Evidence from Jiangsu Province, China*, *Environment and Social Psychology*, 10 (10), 2025, pp. 1–17. <https://doi.org/10.59429/esp.v10i10.4072>

- [41] Elfira, Rasdiana, Fitrawati, M. W. Jasman, K. Reski, A. Anwar, Enaldi, *How does principal's instructional leadership shape teacher performance mediated by teacher self-efficacy in Indonesian education context?*, *Frontiers in Education*, 9, 2024, Article 1401394. <https://doi.org/10.3389/educ.2024.1401394>
- [42] R. Werdiningsih, *Role of the supervision of the school principal in improving the quality of learning at state elementary school's post-pandemic COVID-19*, *International Journal of Education and Practice*, 12 (2), 2024, pp. 217–239. <https://doi.org/10.18488/61.v12i2.3674>
- [43] M. Mossafaie, G. Alibakhshi, H. H. Tabrizi, *Iranian EFL teachers' self-efficacy: Structural equation modeling of the consequences*, *Asian-Pacific Journal of Second and Foreign Language Education*, 9 (1), 2024, Article 42. <https://doi.org/10.1186/s40862-024-00264-2>
- [44] J. F. Hair, J. J. Risher, M. Sarstedt, C. M. Ringle, *When to use and how to report the results of PLS-SEM*, *European Business Review*, 31 (1), 2019, pp. 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- [45] J. F. Hair, G. T. M. Hult, C. M. Ringle, M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.)*, Sage, Thousand Oaks, CA, 2022.
- [46] J. Henseler, C. M. Ringle, M. Sarstedt, *A new criterion for assessing discriminant validity in variance-based structural equation modeling*, *Journal of the Academy of Marketing Science*, 43 (1), 2015, pp. 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- [47] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences (2nd ed.)*, Lawrence Erlbaum Associates, Hillsdale, NJ, 1988.
- [48] J. Henseler, G. Hubona, P. A. Ray, *Using PLS path modeling in new technology research: Updated guidelines*, *Industrial Management & Data Systems*, 116 (1), 2016, pp. 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- [49] S. Streukens, S. Leroi-Werelds, *Bootstrapping and PLS-SEM: A step-by-step guide to get more out of your bootstrap results*, *European Management Journal*, 34 (6), 2016, pp. 618–632. <https://doi.org/10.1016/j.emj.2016.06.003>
- [50] J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, *Multivariate Data Analysis (8th ed.)*, Cengage, Boston, MA, 2019.
- [51] X. Zhao, J. G. Lynch, Q. Chen, *Reconsidering Baron and Kenny: Myths and truths about mediation analysis*, *Journal of Consumer Research*, 37 (2), 2010, pp. 197–206. <https://doi.org/10.1086/651257>
- [52] J. Hair, A. Alamer, *Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example*, *Research Methods in Applied Linguistics*, 1 (3), 2022, Article 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- [53] L. Sheridan, D. Alonzo, H. T. M. Nguyen, X. A. Gao, T. L. Durksen, *Teachers' job engagement: The personal and job resources that matter*, *Humanities and Social Sciences Communications*, 12 (1), 2025, Article 896. <https://doi.org/10.1057/s41599-025-05009-1>.