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Research Paper

Impact of Principals' Learning-centered Leadership on EFL Teachers' Professional Learning: A PLS-SEM Analysis

Marziyeh Rezaee[1], Mohammad Golshan[2]*, Amir Sarkeshikian[3]

[1]Department of English Language, May.C., Islamic Azad University, Maybod, Iran
marziyeh.rezaee@iau.ac.ir
[2*] Department of English Language, May.C., Islamic Azad University, Maybod, Iran
Mohammad.Golshan@iau.ac.ir
[3]Department of English Language, Qo.C., Islamic Azad University, Qom, Iran
amir.sarkeshikian@iau.ac.ir

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Abstract
There has been an increase in the awareness shown in educational research about the organization and psychological aspects, which have a positive effect on teacher professional learning (TPL). Despite their proven effectiveness, there has been limited focus on the combination and effect of the antecedents in the Iranian setting. In an effort to play a gap-filler role, the issue the present paper seeks to investigate and respond through the application of scientific knowledge and theory is the effect of principals' learning-centred leadership practices on teacher professional learning in Iran, specifically focusing on teacher trust and teacher-self efficacy. The proposed model was assessed using partial least squares structural equation modeling on the basis of data generated through a pre-prepared 74 item multi-scale questionnaire designed and distributed among 206 Iranian English foreign language teachers, who were all EFL instructors, totaling 141 men and 65 females, aged 25-35, and all the respondents were employed in different language institutes.

Keywords**:** *Learning-centered leadership, Teacher professional learning, Teacher trust, Teacher self-efficacy*

Introduction
Teacher professional learning has extensively been explored in the existing literature because of its pivotal role in improving teacher instruction and student performance, and hence promoting educational reforms in the learning institutions (Doğan & Yurtseven, 2018; Lieberman & Pointer Mace, 2008; Akiba & Liang, 2016; Nye et al., 2004; Parise & Spillane, 2010). In addition, teacher professional learning has also been cited as a basic need for teachers who need to be updated on the latest developments in the field of education, hence ensuring educational equity and quality (McMahon et al., 2015).

The awareness regarding the linkages between teachers' professional learning, the quality of teachers' teaching, student outcomes, and educational reforms has led researchers to focus on the strategic factors influencing teacher professional learning and teacher learning strategies in the process, such as the role of factors like teacher decision-making autonomy, teacher collaboration, teacher trust, and Principals' Learning-Centric Leadership Practices (PLCL) in promoting TPL, among others, by scholars like Day & Gu, 2007; Huang et al., 2020; King, 2016; Li et al., 2016; Liu et al., 2016; Prenger et al., 2017; Thoonen et al., 2011; Zheng et al., 2019. The organized conditions in schools, like teacher participative management, teacher collaboration, teacher trust, and Principals' Learning-Centric Leadership Practices, play a major role in the promotion of TPL, as supported by evidence from studies like Admiraal et al., 2016; Alazmi & Hammad, 2023; Geijsel et al., 2009; Hallinger & Lu, 2014. The psychological conditions, like teacher-self efficacy, teacher autonomy, and sense-making, are important in the promotion of TPL, discussed by authors like Coburn, 2004; Hallinger & Liu, 201

In spite of the importance of the organizational conditions and psychological factors in the formation process of TPL, there has been little investigation on the relationship between the antecedents of TPL (Huang et al., 2020). Moreover, the antecedents that have been examined up until now have managed to explain only a limited and medium extent of the present differences in TPL (Oude Groote Beverborg et al., 2015). Therefore, this study aimed to explore the following two aspects in an organization in the educational setting, both of which have been verified and proven to play important roles in defining teacher development worldwide: PLCL, such as Bellibaš et al. in 2020, Huang et al. in 2020, Kilinc et al. in 2022, Liu et al. in 2016, and Talebizadeh et al. in 2021, and TT, such as Alazmi and Hammad in 2023, Bryk and Schneider in 2003, Hallinger and Liu in 2016, Li et al. in 2016, and Zheng et al. in 2016.

Moreover, the purpose of the proposed study was also to focus on TSE because among the different psychological factors acting as variables, influencing the relationship existing between the work organization environment and teacher learning, TSE was discovered to be one among the factors with the highest impact, potentially influencing TPL (Huang et al., 2020; Liu & Hallinger, 2018; Ma & Marion, 2021; Thien et al., 2023).

Therefore, the purpose of this research was to examine the effect of PLCL on TPL in Iran, particularly through the mediating roles of TT and TSE. The following question led this investigation:

RQ: *In what ways does PLCL impact TPL, whether directly and/or indirectly through the mediator variables of TT and TSE?*

Literature Review

Conceptual framework

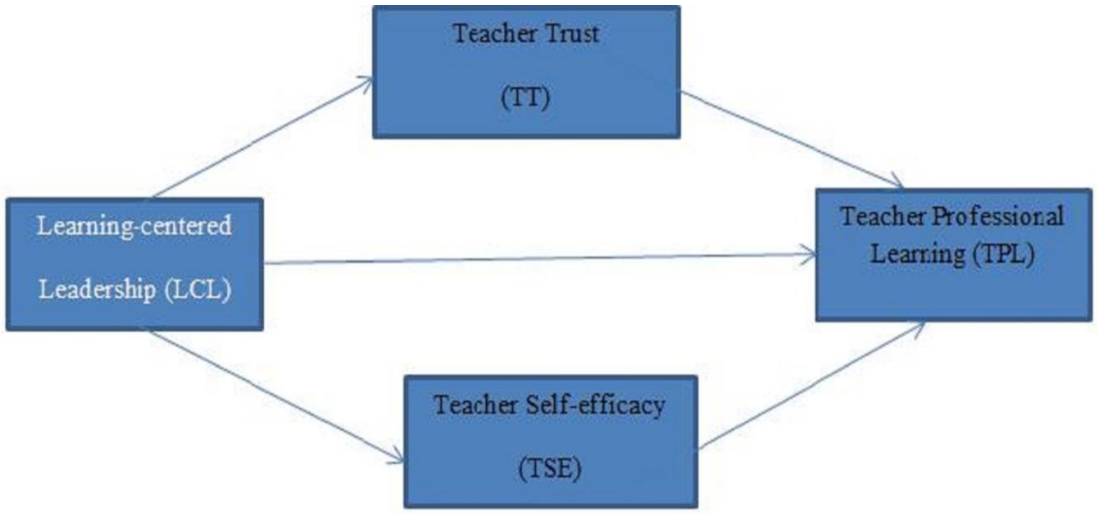
In light of the work that has been conducted in the past concerning the relationship between the teacher's psychological characteristics and the factors in their organization affecting their professional development (Geijsel et al., 2009; Hallinger & Liu, 2016; Hallinger et al., 2019; Huang et al., 2020; Liu & Hallinger, 2018; Liu et al., 2016; Oude Groote Beverborg et al., 2015; Thoonen et al., 2011), the proposed model has been designed and appears in Figure 1.

The proposed model assumes that PLCL has a direct and positive effect on TPL (Bellibaş et al., 2020; Hallinger & Liu, 2016; Kilinc et al., 2022). In addition, it was also assumed that PLCL leadership has direct and positive effects on TT (Alazmi & Hammad, 2023; Hallinger et al., 2019; Liu et al., 2016; Talebizadeh et al., 2021) and TSE (Huang et al., 2020; Thien et al., 2023). In the proposed model, TT and TSE are also assumed to have direct and positive effects on TPL (Alazmi & Hammad, 2023; Hallinger et al., 2019; Li et al., 2016; Thien et al., 2023). The proposed model further posits that PLCL indirectly affects TPL through the mediated effects of

TT (Alazmi & Hammad, 2023; Hallinger et al., 2019; Liu et al., 2016; Talebizadeh et al., 2021) and TSE (Huang et al., 2020; Thien).

Figure 1

The hypothesized model of the study



Teacher professional learning (TPL)

TPL was conceptualized and perceived in the past as a process through which teachers were simply presented with some type of "new information" or "teaching approach," usually in the form of an introductory workshop, conference, and so on (Flint et al., 2011). This model was deemed ineffective because it did not adequately provide the teacher with the tools and skills needed in order to better their practices and because it constrained their creativity in the class room (Garet et al., 2001). These types of events were proven ineffective in their ability to positively impact on the quality of the teacher, and the likelihood that they would cause a change in the teacher's practices was proven doubtful.

In light of these shortcomings, the definition and role of TPL have transformed and now include a dynamic and cooperative process, placing importance on the role and process involved in teacher learning in the work environment (Geijsel et al., 2009; Liu & Hallinger, 2018; Sleegers et al., 2014; Vescio et al., 2008; Yin et al., 2019). This development adjusts and corresponds with the knowledge that teacher learning, in relation to the effectiveness and process involved, can and should be best achieved in a collaborative and social manner through the concept and process involved in collective learning among teachers in the work environment (Darling-Hammond & Richardson, 2009; Easton, 2008; Moolenaar et al., 2012) and in a social-professional environment in relation to teacher development and social-professional learning and development involved in the teacher work

In keeping with this present perspective, in the present study, TPL was viewed as a process of developing capacity in the workplace (Darling-Hammond & Richardson, 2009), and involved dynamic and ongoing and interactive communication among the instructors in the workplace setting (Liu et al., 2016). In keeping with the developing perspective and the related present understanding, through the cited work by Liu et al. in 2016, the present work has endeavored and has achieved the integration of the four essential elements in the process of teacher professional learning, that are “Collaboration (C), Reflection (R), Experimentation (E), and Reaching out to the Knowledge Base (RKB)” (p. 80).

Trust

Trust has been revealed to constitute an essential formative factor in the achievement of TPL, and it has the biggest direct effect on TPL compared with the other factors in the model proposed by Hallinger and Lu. (.2014) and supported by other researchers, including Zheng et al. (.2016) and Karacabey et al. (.2022). Trust has also been discovered to play an essential role in developing high-level social relationships among individuals and representatives, apart from acting as an important type of social capital and a powerful agent promoting cooperative work together in the organization. The significance and importance of trust in supporting and promoting teachers' organizational and educational work and their participation in the organization, together with their dedication and commitment to the organization, was stressed in different studies, such as in those conducted by Mansor et al. (.2021) and Mirza and Redzuan (.2012).

Trust has also long been revealed and recognized to constitute an important factor and play an important role in promoting the improvement and effectiveness of student performance and overall effectiveness in schools, and the elimination and avoidance of underachievement and school failure, according to the studies by other researchers, including Louis (.2007) and Tschannen-Moran and Gareis (.2015). Trust, in general, has an important role in ensuring the motivation and encouragement of teachers in actively engaging

In this study, using the conceptual framework proposed by Hoy et al. in 2006, the concept of "trust" was measured as "One's vulnerability to another in terms of the belief that the other will act in one's best interests" (p. 429). Moreover, three different aspects of the concept of "trust" have been employed in this study, and they include "calculative trust (CT), relational trust (RT), and faith trust (FT" (Liu et al., 2016, p.81). CT "attempts to reason about the personal costs and benefits" of relationship-building (Poppo et al., 2016); on the other hand, the basis for the other aspects, namely RT, has roots in the non-cognitive aspects like "empathy, affiliation, and care about others' well-being in interpersonal transactions, personality dispositions, and congenial attitude" in interpersonal relationship development across different dimensions and aspects, namely, in the broader social settings like "within work settings, in relation to the entire class of colleagues" in the school environment, proposed and conceptualized by Cranston in 2011. Furthermore, the third aspect, namely

Self

SE has proven itself to be a strong psychological motivator encouraging the participation and continuation of teachers in their professional development activities (Künsting et al., 2016; Rizvi & Elliot, 2005). SE means "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). TSE, conceptualized through Bandura's social cognitive theory in 1986, specifically embodies "teachers' beliefs about their capability to impact students' motivation and achievement" (Tschannen-Moran & Hoy, 2007, p. 944).

SE may have double the role in relation to teachers. Firstly, it may increase their capacities and enable them to pursue their personal interest and engage in personal development activities by setting personal tasks for themselves (Geijsel et al., 2009). Secondly, it may remove their fear of failure and increase their perseverance in their personal goal accomplishment (Runhaar et al., 2010). Various studies have revealed those teachers who have high SE believe and hold the attitude that they are encouraged and able to meet their personal and high-level personal educational goals even in the most difficult circumstances (Cho & Shim, 2013), and they are receptive and enthusiastic in adopting different innovative and advanced ways in their class teachings and practices in order to increase the performance and achievement levels of the students in the best possible manner (Thien et al., 2023). Furthermore, numerous studies have

reaffirmed the effectiveness and critical role of TSE in achieving and supporting TPL, increased SM, and success, and school developments and improvement on different and larger platforms and dimensions (Klassen & Tze, 2014; Tschannen-Moran & Hoy, 2007; Zee & Koomen, 2016). Thus, different studies and their results have reaffirmed and supported that TSE has a critical enabling role and effect in relation to the developments and improvements in the field and subject of TPL and the overall educational developments and improvements. In this paper, basing on the different understandings, comprehensions, and recognitions, the definition and concept provided by Oude Groote Beverborg et al. in 2015 has been adopted, and teacher SE was considered and determined in the following manner: "a future-oriented belief about the level of competence that a person expects to display in a given situation" (p. 31).

Learning-centered leadership (LCL)

leadership is extensively acknowledged as a determining factor in the development of TPL, especially when it incorporates the characteristics of LCL (Bellibaš et al., 2020; Hallinger & Liu, 2016; Huang et al., 2020; Kilinc et al., 2022; Kulophas & Hallinger; 2020; Liu et al., 2016; Talebizadeh et al., 2021). Studies have revealed the extensive acceptance and adoption of LCL among the different leadership models in the past decades, in light of the focus on the development of the capacity that can improve the effectiveness of the learning process among teachers and students in the educational setting (Heck & Hallinger, 2014; Hallinger, 2011; Stoll et al., 2006; Liu et al., 2016; Özdemir et al., 2023).

The acknowledgment of the importance of LCL in the enhancement of TPL has led to an increased interest in studies on the role leaders play in developing the work environment and achieving the professional development and improvement of both teachers and students. Among the studies conducted, trust has been revealed as an important part of the work environment in influencing the role principals play in developing the TPL. Trust and the relationship it establishes in the work environment was discovered in studies carried out by several researchers, including Cranston in 2011, Li et al. in 2016, Louis in 2007, and Wahlstrom and Louis in 2008.

Moreover, studies have revealed that SE acts as an important psychological channel through which school principals can exert their impact on TPL (Geijsel et al., 2009; Huang et al., 2020; Liu & Hallinger, 2018; Thien et al., 2023; Zheng et al., 2019). The available evidence through scientific studies reveals that school principals can raise the teachers' SE by promoting a pleasant and stimulating environment for teachers, and setting directions and expectations in the organization (Fackler & Malmberg, 2016); and they can raise the teachers' SE on the personal dimension by showing high expectations in the field of teaching, watching the teachers' classes, and giving proper suggestions to the teachers in the organization (Tschannen-Moran & Hoy, 2007).

In summary, the literature review provides evidence in support of the argument that the use of LCL is an important factor facilitating the adoption of TPL. In this vein, the role played by TT and TSE has also proven vital in affecting the relationship between LCL and TPL.

In the present study, the construct LCL was defined using the framework proposed by Liu et al.'(2016) in terms of "$leadership practices that support teacher development and student learning$" (p.80). The construct proposes that principals "influence teacher and student learning" because they "engage in building a learning vision (BLV), provide learning support (PLS), manage the learning program (MLP), and model (M)"(Liu et al., 2016, p. 80).

Method

Design of the Study

The design of this was cross-sectional because it helped in testing the proposed model in the field of the present study, namely the Partial Least Squares modeling approach. The phases involved in

the design of the present investigation include the following three stages: (1) testing the measurement model, (2) testing the structural model, and (3) the overall model.

Participants

There were 206 EFL teachers working in English institutes in different cities in Iran. 141 subjects were females, and the remaining 65 were male. All subjects possessed an M.A. in TEFL. The age range was between 25-35, and the mean was 29.85 with an SD of 3.19. The experience range was 5-10, and the mean was 7.22 with an SD of 1.71.

Instruments

In this study, a multi-scale questionnaire was employed in measuring the extent to which the respondents agreed on the items related to the constructs under investigation. There were 74 items in the questionnaire, and they were grouped into 4 major variables, namely PLCL, TT, TSE, and TPL. The items were measured using a 5-point Likert scale, ranging from 1, whose label was strongly disagreed, and 5, whose label was strongly agreed. All the items came from pre-validated measures in the literature. In particular, the use of the PLCL, TT, and TPL scales was conducted through the work by Liu et al. in the year 2016. Furthermore, the use of the TSE scale was adopted from Oude Groote Beverborg et al. in the year 2015. In the PLCL, there were items amounting to 24, categorized under four factors. These factors include “BLV” with a total of 6 items, “PLS” with 8 items, “MLP” with 5 items, and “M” with the remaining 5 items (Liu et al., 2016, p. 88). In the TT, there were items amounting to 17, categorized under three dimensions. These dimensions include “CT” with a total of 5 items, “RT” with 6 items, and the remaining 6 items under “FT” (Liu et al., 2016, p. 88). In the TSE, there were items amounting to 6. These items were categorized under one dimension denoted simply as “TSE” with the 6 items, adopted from Oude Groote Beverborg et al. in the year 2015 (Oude Groote Beverborg et al., 2015, p.

Procedures

A total of 1200 Iranian EFL teachers who were employed in the English institutes in different cities, randomly chosen from the database of Iranian EFL teachers, were invited through emails between September 2020 and March 2021. The respondents were assured that their participation in the questionnaire would be on a voluntarily basis and that their answers would remain anonymous. In effect, the questionnaire was the respondents' submission to the study, and 206 responded. The response rate was 17.16%.

Data Analysis

The proposed model was analyzed through the use of Partial Least Squares Path Modeling. The use of Partial Least Squares was informed by a number of reasons. Firstly, Partial Least Squares Path Modeling is a type of statistical analysis procedure under the broader Structural Equation Model umbrella, and the procedure enables the investigation and testing of complex predictive and multivariate models, including both the measurement and the structural model aspects, all under one procedure (Chin, 1998). Secondly, the procedure enables the model and the structure modeling aspects to be modeled concurrently and within the one setting and process, namely the R model, and this provides the needed gains and improvements in precision, validity, and reduced complexity over the use of the standard model approach, and this was advocated by Gefen et al. (2000). Thirdly, the Partial Least model and process does not make assumptions concerning distribution, and in light of this

Results

The analysis indicated that the mean scores of the scales assessing PLCL, TT, TSE, and TPL were greater than 3.00 (table 1). It can be observed that the mean score was highest in the TPL scale (M = 4.402, SD = 0.471) and the lowest in the PLCL scale (M = 3.642, SD = 0.908).

Table 1

The results of descriptive statistics, internal consistency reliability, and convergent validity analysis.

Research constructs	Mean	SD	CR	Alpa	AVE
PLCL	3.642	0.908	0.958	0.954	**0.681**
BLV	3.839	0.973	0.925	0.898	**0.681**
PLS	3.598	1.117	0.950	0.940	**0.704**
MLP	3.462	1.142	0.938	0.917	**0.752**
M	3.668	1.154	0.942	0.922	**0.763**
TT	3.824	0.726	0.931	0.920	**0.727**
CT	3.870	0.820	0.883	0.832	**0.606**
RT	3.720	0.878	0.920	0.894	**0.659**
FT	3.882	0.803	0.890	0.852	**0.575**
TPL	4.402	0.471	0.941	0.935	**0.602**
C	4.393	0.750	0.951	0.938	**0.763**
R	4.379	0.535	0.921	0.905	**0.542**
E	4.500	0.537	0.925	0.898	**0.714**
RKB	4.337	0.573	0.862	0.806	**0.515**
TSE	4.340	0.548	0.876	0.831	**0.541**

In addition, the result from the outer loadings analysis showed that all the items had significant loadings in their corresponding factors at $p < 0.05$ (Table 2). The values of the outer loadings of the reflective variables exceeded the recommended threshold value of 0.4 as recommended by Hulland in 1999 (Table 2). Furthermore, the alpha value of all the constructs surpassed the minimum threshold value of 0.7 as recommended by Fornell and Larcker in 1981 (Table 1). The composite reliability of all the factors surpassed the minimum threshold value of 0.7 as recommended by Hair et al. in 2019 (Table 1). All these imply that the measurement model had internal consistency reliability.

Table 2

The results of the indicator loadings analysis.

Construct & Item	Loading	T value	P value
PLCL			
BLV			
Item1	0.91	88.44	0.00
Item 2	0.88	47.50	0.00
Item 3	0.48	6.14	0.00
Item 4	0.90	69.49	0.00
Item 5	0.80	25.62	0.00
Item 6	0.86	37.99	0.00
PLS			
Item 7	0.87	45.28	0.00
Item8	0.83	37.28	0.00
Item9	0.82	34.06	0.00
Item10	0.76	24.37	0.00
Item11	0.87	51.45	0.00
Item12	0.86	41.62	0.00
Item13	0.82	31.14	0.00
Item14	0.84	34.79	0.00
MLP			
Item15	0.88	57.39	0.00
Item16	0.86	49.67	0.00
Item17	0.87	40.18	0.00
Item18	0.87	42.49	0.00
Item19	0.82	32.01	0.00
Modeling			
Item20	0.84	44.40	0.00
Item21	0.83	32.27	0.00
Item22	0.92	84.45	0.00
Item23	0.85	37.33	0.00
Item24	0.85	51.04	0.00

Construct & Item	Loading	T value	P value
TT			
CT			
Item25	0.82	31.49	0.00
Item26	0.87	54.62	0.00
Item27	0.81	27.55	0.00
Item28	0.78	23.76	0.00
Item29	0.54	7.98	0.00
RT			
Item30	0.84	34.05	0.00
Item31	0.69	13.85	0.00
Item32	0.90	70.63	0.00
Item33	0.88	56.40	0.00
Item34	0.76	22.53	0.00
Item35	0.76	20.53	0.00
FT			
Item36	0.79	25.52	0.00
Item37	0.79	24.33	0.00
Item38	0.78	22.61	0.00
Item39	0.71	15.12	0.00
Item40	0.71	17.44	0.00
Item41	0.74	17.87	0.00
TPL			
C			
Item42	0.86	34.69	0.00
Item43	0.87	23.54	0.00
Item44	0.86	31.86	0.00
Item45	0.84	22.84	0.00
Item46	0.89	39.57	0.00
Item47	0.90	41.30	0.00
R			
Item48	0.74	15.11	0.00

Construct & Item	Loading	T value	P value
Item49	0.64	14.37	0.00
Item50	0.62	12.35	0.00
Item51	0.66	14.04	0.00
Item52	0.78	25.67	0.00
Item53	0.69	16.08	0.00
Item54	0.80	24.13	0.00
Item55	0.82	31.27	0.00
Item56	0.80	26.81	0.00
Item57	0.74	23.27	0.00
E			
Item58	0.90	46.91	0.00
Item59	0.89	37.10	0.00
Item60	0.86	26.66	0.00
Item61	0.82	19.48	0.00
Item62	0.72	12.00	0.00
RKB			
Item63	0.70	11.56	0.00
Item64	0.77	16.60	0.00
Item65	0.77	13.65	0.00
Item66	0.81	21.67	0.00
Item67	0.67	11.56	0.00
Item68	0.53	9.07	0.00
TSE			
Item69	0.75	22.13	0.00
Item70	0.75	17.97	0.00
Item71	0.75	17.80	0.00
Item72	0.67	10.32	0.00
Item73	0.72	14.50	0.00
Item74	0.74	18.46	0.00

To test the validity of the measurement model, both convergent and discriminant validities were employed (Chin et al., 2003). The result of the convergent validity test attests that the average variance extracted (AVE) by the factors exceeded the recommended threshold of 0.5 (Fornell & Larcker, 1981) (Table 1). In Chin (2010), when the composite reliability is above 0.8 and the AVE is above 0.5, more than 50% of the variance in the indicator can be explained. In discriminant validity analysis, the square roots of the AVE were found to exceed the correlations between the research variables (Fornell & Larcker, 1981) (Table 3). Also, the HTMT measure failed to go beyond the recommended cut-off of 0.85 in the research variables (Henseler et al., 2015) (Table 4). In conclusion, the convergent and discriminant validities of all the variables under test have been shown to meet satisfactory standards.

Table 3

The results of discriminant validity analysis using Fornell-Larcker criterion.

First-order constructs	**BLV**	**PLS**	**MLP**	**M**	**CT**	**RT**	**FT**	**C**	**R**	**E**	**RKB**	**TSE**
BLV	.82											
PLS	.50	.83										
MLP	.45	.56	.86									
M	.61	.62	.69	.87								
CT	.40	.43	.45	.49	.77							
RT	.33	.33	.41	.38	.55	.81						
FT	.42	.49	.50	.50	.65	.56	.75					
C	.25	.29	.39	.37	.46	.44	.45	.87				
R	.35	.39	.35	.41	.44	.44	.50	.43	.73			
E	.40	.42	.31	.30	.34	.33	.39	.32	.49	.84		
R	.42	.41	.41	.38	.50	.40	.43	.46	.50	.62	.71	
TSE	.37	.44	.41	.39	.40	.42	.48	.37	.45	.52	.49	.73

Table 4

The results of discriminant validity analysis using Heterotrait-monotrait ratio (HTMT).

First-order constructs	**BLV**	**PLS**	**MLP**	**M**	**CT**	**RT**	**FT**	**C**	**R**	**E**	**RKB**	**TSE**
BLV												
PLS	.54											
MLP	.48	.60										
M	.67	.67	.75									
CT	.46	0.49	0.50	0.55								
RT	0.37	0.36	0.45	0.42	0.63							

FT	0.48	0.55	0.57	0.57	0.76	0.63					
C	0.27	0.31	0.42	0.40	0.52	0.49	0.50				
R	0.39	0.42	0.39	0.45	0.51	0.49	0.58	0.473			
E	0.45	0.46	0.34	0.33	0.39	0.37	0.44	0.35	0.54		
RKB	0.51	0.47	0.49	0.45	0.61	0.48	0.52	0.53	0.58	.72	
TSE	0.43	0.49	0.47	0.44	0.48	0.49	0.57	0.42	0.51	.60	0.60

Assessment of the structural model

The assessment of the structural model needs to take into consideration certain parameters like "the variance inflation factor (VIF), the coefficient of determination (R^2), the blindfolding-based cross-validated redundancy measure 〖 Q〗^2, and the statistical significance and relevance of the path coefficients" (Hair et al., 2019). To eliminate any bias in the outcome of the regression analysis, collinearity of the predictor variables was tested before evaluating the structural model (Hair et al., 2019). The collinearity test was performed using the variance inflation factor (VIF), where any VIF value above 5 was considered potentially affected by multicollinearity. In the sample analysis presented in Table 5 above, all VIF factors are less

Table 5

The results of collinearity analysis using VIF values

Independent variable → Dependent variable	VIF value
PLCL →TPL	**1.70**
TT → TPL	**1.75**
TSE→ TPL	**1.46**

The predictive capability of the structural model was tested using R-squared estimates of the endogenous constructs (Chin, 2010). It was suggested by Roldán & Sánchez-Franco (2012) that the predicting variable must explain at least 10% (0.1) of the variance in the variable it predicts. It was further suggested by Chin (1998) that R-squared estimates above 0.67, between 0.33 and 0.67, and around 0.19 indicated strong, medium, and weak relationships, respectively

In the current research, PLCL, TT, and TSE accounted for 53.9% of the variance in TPL (Table 6). In addition, TT and TSE held 36.9% and 24.6% of the variance in TT and TSE, respectively, when predicted by PLCL. For the current research, the R^2values of TPL and TT surpassed the moderate level, whereas the R^2value of TSE surpassed the level of weakness postulated by Chin (1998) with regards to predictive power.

To test the predictive fitness of the structural model, the Stone-Geisser test, denoted as 〖 Q〗^2, was employed (Hair et al., 2019). Chin (Hair et al., 2019) reported that when the result of 〖 Q〗^2is above zero, it indicates that there is predictive fitness between the exogenous and endogenous construct. Otherwise, when the result is less than zero, it represents that there lacks any predictive fitness. In the current analysis, the result of 〖 Q〗^2for TPL, TT, and TSE was above 0; therefore, there was predictive fitness

Table 6

The results of coefficient of determination (R^2) and prediction relevance (Q^2) analysis.

Dependent variables	R^2	Q^2
TT	0.369	**0.156**
TSE	0.246	**0.127**
TPL	0.539	**0.193**

To determine the level of significance of the path coefficients, a bias-corrected and accelerated (BCa) bootstrapping analysis was employed (Hair et al., 2019). In Fig. 2, Fig. 3, and Table 7, PLCL was found to positively and significantly affect TT ($\beta = 0.60 > 0$, $t = 11.48 > 1.96$, $p < 0.05$), TPL ($\beta = 0.19 > 0$, $t = 2.36 > 1.96$, $p < 0.05$), and TSE ($\beta = 0.49 > 0$, $t = 8.30 > 1.96$, $p < 0.05$). TT was discovered to significantly and positively affect TPL ($\beta = 0.38 > 0$, $t = 5.42 > 1.96$, $p < 0.05$), and TSE was found to positively and significantly affect TPL ($\beta = 0.29 > 0$, $t = 4.81 > 1.96$, $p < 0.05$). It can thus safely be stated that all five direct hypothesis specified in Fig 1 above are significant.

Table 7

The results of hypothesis testing.

Hypothesis		T value	P value	Decision
PLCL → TT	.60	11.48	0.00	**Supported**
PLCL → TSE	.49	8.30	0.00	**Supported**
TT → TPL	.38	5.42	0.00	**Supported**
TSE→ TPL	.29	4.81	0.00	**Supported**
PPLCL → TPL	.19	2.36	0.01	**Supported**

Figure 2

PLS results of the structural model with path coefficients (β) and R^2 values

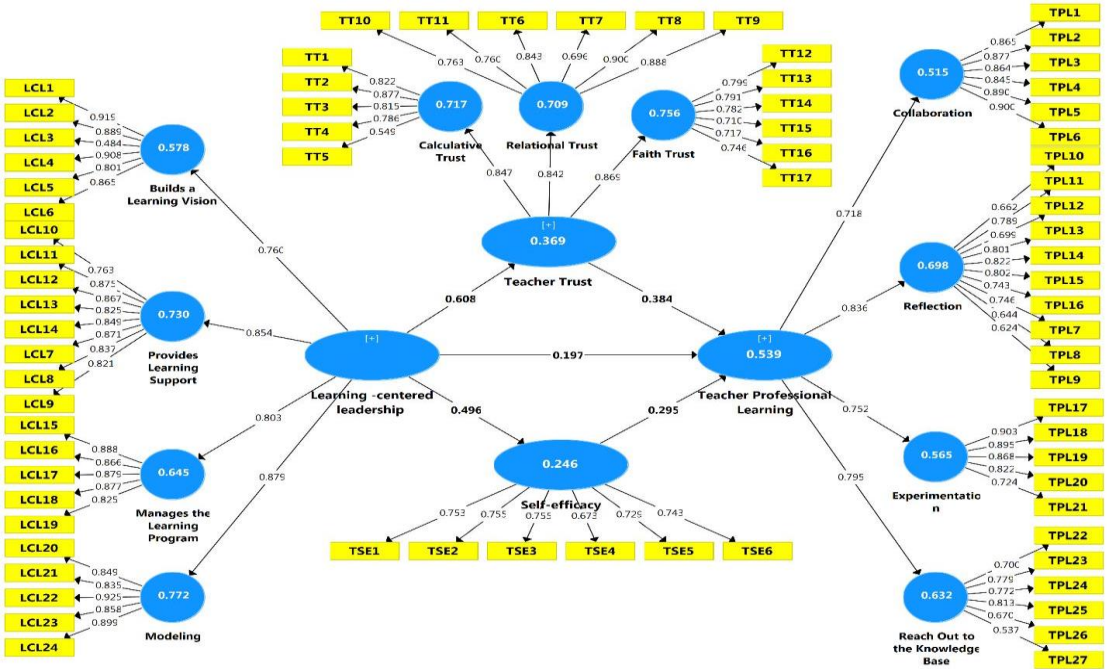


Figure 3

PLS results of the structural model with T-values

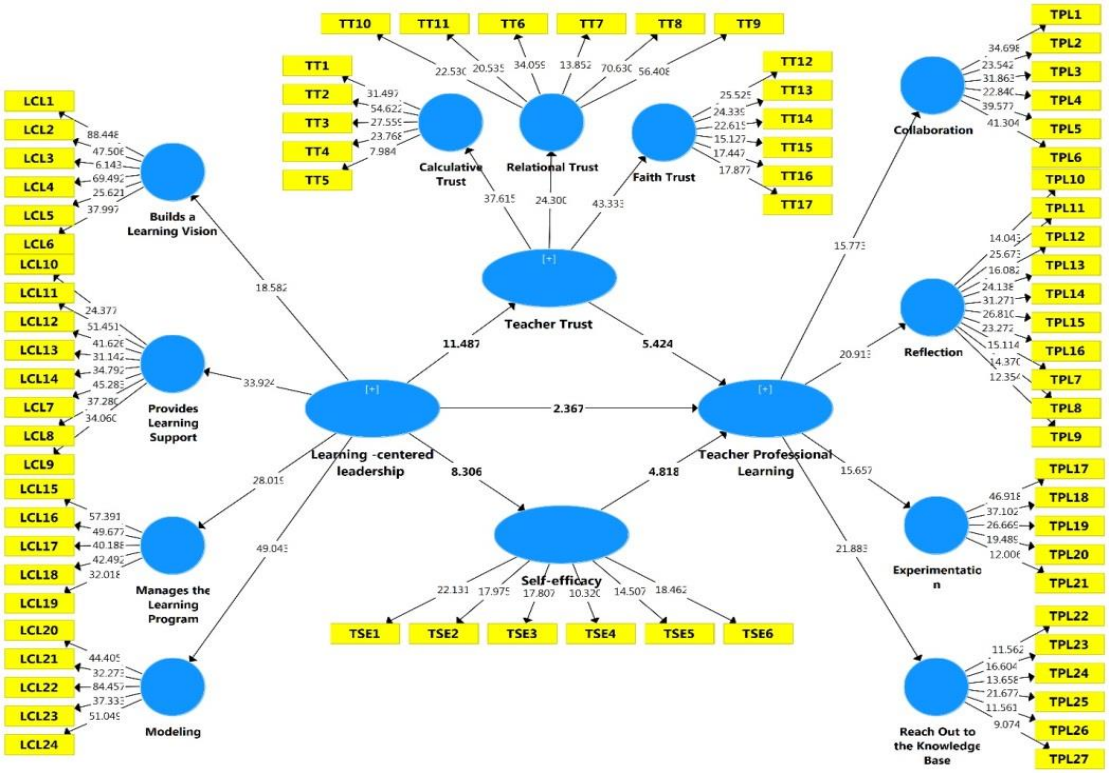


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Table 8

The effect of PLCL on TPL through TT

Sobel test				
Direct effect	Indirect effect	Total effect	T value	**P value**
0.19	0.23	0.43	6.23	**0.00**

Table 9

The effect of PLCL on TPL through TSE

Sobel test				
Direct effect	Indirect effect	Total effect	T value	**P value**
0.19	0.14	0.34	5.18	**0.00**

Overall model quality assessment

After assessing the measurement model and structural model, the overall model fit was estimated using the goodness-of-fit index (GoF). The GoF index varies from 0 to 1. Values of 0.01, 0.25, and 0.36 are considered to represent low, medium, and strong model fit, respectively (Wetzels et

al., 2009). It can be seen in Table 10 that the GoF index was above 0.36, showing strong model fit.

Table 10

The result of the overall quality of the research model assessment

$\overline{R^2}$	$\overline{\text{Communalities}}$	$\text{GoF} = \sqrt{\overline{\text{Communalities}} \times \overline{R^2}}$
0.60	0.50	**0.55**

Discussion

In this research, the intention was to explore the effects of PLCL on TPL in Iran. The reason why the mediating effect of TT and TSE on the relationship between PLCL and TPL was specifically targeted was that the combined role of these variables in influencing TPL has long remained unclear and uninvestigated. The data was collected using the multi-scale questionnaire among 206 English teachers in Iran, and the Partial Least Squares Path Modeling approach was adopted.

The results showed that there was a significant positive direct effect of PLCL on TPL, corroborating other studies emphasizing the essential role of PLCL in developing an engaging and motivating environment for teachers in their professional development process (Hallinger & Liu, 2016; Hallinger et al., 2019; Huang et al., 2020; Liu et al., 2016). The results also revealed the development role of distinct practices related to LCL, namely BLV, PLS, MLP, and M, in teacher learning development (Hallinger & Liu, 2016; Liu et al., 2016; Talebizadeh et al., 2021).

In addition, the results showed that there was a significant positive direct effect of PLCL on TT, supporting the findings in the existing literature on the role of PLCL in developing teachers' trust and collegiality (Hallinger & Liu, 2016; Hallinger et al., 2019; Liu et al., 2016).

Moreover, TT was discovered to be a predictor for TPL, and it has been concluded that the development of trust is important in developing a safe and cooperative environment where teachers are encouraged to take up initiatives that help in developing their professional abilities (Talebizadeh et al., 2021). In other words, a lack of trust may cause teachers to remain reluctant in cooperative activities that play a major role in successful work-related learning.

In addition, the findings supported some other studies conducted in the past year, such as the work completed by Hallinger and Liu in 2016, Li, et al., in 2016, Liu, et al., in 2016, and Talebizadeh, et al., in 2021, in finding the positive and significant role of TT in the relationship between PLCL and TPL.

In addition, the findings revealed a positive and direct effect between PLCL and TSE, supporting pre-existing evidence that has given importance to the role played by PLCL in developing SE among teachers in schools (Huang et al., 2020; Thien et al., 2022). This suggests that leaders who support the implementation of LCL are likely to increase the teachers' unswerving belief in their capacity to meet particular performance targets.

Moreover, the findings have verified the strongly positive and direct effect of TSE on TPL, validating the great importance of SE in the process of teacher professional development, an aspect that has long been stressed in the related scientific studies conducted by Oude Groote Beverborg et al. in 2015, Geijsel et al. in 2009, Huang et al. in 2020, Liu and Hallinger in 2018, and Thien et al. in 2023. As appeared in the scientific studies, teachers' SE has the power to encourage them to work towards their personal interests and pursue their development through setting high personal goals for themselves, an aspect stressed by Oude Groote Beverborg et al. in 2015. This unshaken belief in themselves dispels their fear of failure, making them persevere in everything they do, and hence accomplishing their professional aims as argued by Runhaar in 2010.

In addition, the findings verified the mediating effect of TSE on the relationship between PLCL and TPL, supported by other studies conducted by Huang et al. in 2020, and by Thien et al. in 2022. This means that leaders who are focused on student learning can increase teacher SE, resulting in increased teacher participation in professional development.

In conclusion, the results of the study highlight the direct and indirect relationship between PLCL and TPL, where TT and TSE play an important role in the process. The results imply that principals who emphasize LCL can create an environment in which teacher development takes place. By ensuring the development of an environment in which there is trust, teachers develop their efficacy, and the leaders exercise effective leadership, principals can encourage the teachers to take an active role in development and hence bring about teacher development.

Conclusion

The present study adds to the growing number of studies that attempted to clarify the connections between leadership and TPL (Hallinger & Lu, 2014; Hosseingholizadeh et al., 2023; Kaparou & Bush, 2015; Liu & Hallinger, 2018; Shengnan & Hallinger, 2021; Qian & Walker, 2013; Thien et al., 2023; Wang, 2016). In particular, the present exploratory investigation was innovative in its methodology since it specifically focused on the direct and indirect relationships between PLCL and TPL in Iran in relation to TT and TSE.

In summing up, in keeping with the earlier works on the subject, namely Hallinger and Liu (2016), Hallinger et al. (2019), Huang et al. (2020), Liu et al. (2016), and Talebizadeh et al. (2021), the findings from the present study revealed the existence of a significant positive direct relationship between PLCL and TPL. Furthermore, the present work has established the presence of significant positive indirect relationships, mediated by TT and TSE, respectively, between PLCL and TPL.

This study also has important implications in terms of improving the TPL. In the first place, the principals in educational institutions should make LCL best practices their priority.

Secondly, the role of school principals in ensuring there are plenty of opportunities for TPL in the school environment and engaging in these types of learning experiences together with the teachers cannot be overemphasized. Joining the teachers in various forms of professional development can help the school principals act as role models in terms of the values placed on collaboration and collegiality.

Thirdly, school administrators need to create a positive learning environment that fosters SE beliefs among teachers to build an optimal environment for TPL. In this regard, Rizvi and Elliot (2005) argued that “SE is the filter through which all other innovations must pass before they are adopted and become part of the teacher's behavioral repertoire” (p. 37). This means that SE has an important role in shaping the teachers' attitudes toward the value placed on professional experiences. In this regard, teachers who have high SE in their careers are better placed to deal with difficult circumstances and professional development opportunities, hence increased teacher development.

In the fourth place, the school administrators ought to create a positive culture of learning that would help bring the teachers together in Trust and make them actively participate in the process of TPL. A work environment that exudes Trust, as Kalkan (2016) rightly said, provides scope and opportunity for collaborative and participative learning and enables people to exchange their experiences, skills, and innovative ideas. Creating Trust in the environment has an important role in facilitating the process of TPL and sustainable change in the school, leading to effectiveness, since, according to Bryk and Schneider (2003), Louis (2007), Trust in the environment has the ability and power to bring all together.

Finally, there is a need for the development of leadership training courses by researchers, planners, and implementers that blend the ideas and approach related to LCL. The courses would help in the redifnition of the role of principals in schools.

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