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Analyzing the relationship between principals' learning-centered leadership and teacher professional learning: The mediation role of trust and knowledge sharing behavior

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ABSTRACT

This study tested the relationship between principals' learning-centered leadership and teacher professional learning in Iranian primary schools, with a focus on the mediating role of trust and knowledge sharing behavior. Survey data collected from 886 teachers in 121 primary schools, representing a range of socioeconomic status, distributed across three districts in the city of Mashhad. Data were analyzed using confirmatory factor analysis and structural equation modeling. The results illustrate significant path relationships between the constructs, linking learning-centered leadership with teacher professional learning. Learning-centered leadership directly influenced the professional learning of teachers, and such a relationship was fully mediated by the teachers' trust and knowledge-based sharing behavior in these Iranian primary schools. These results provide evidence that principals can enhance teacher learning by emphasizing teaching and learning to develop trust among teachers and foster knowledge sharing.

1. Introduction

Reinforced by the effective school movement, the wave of school restructuring efforts since 1980 has affirmed the centrality of the principal under the new labels 'leadership for learning' (LFL) or 'learning-centered leadership' (LCL) that its distinctive feature is capacity building to promote the learning of all members of the school community. This shift challenged the conventional managerial role of the principal (Imig, Holden, & Placek, 2019; Pan, 2008; Seong, 2019). A new challenge for school principal centers on the question of how to create a school environment where teaching and learning can be enhanced (Pan, 2008). According to Hallinger (2011), successful principals in this context are seen as value-driven, cooperation-oriented, sharing and empowering leadership where appropriate, and developing suitable strategies, as a way to build the school's capacity for the improvement of teaching quality and student learning, (Tulowitzki, Pietsch, & Spillane, 2020). This type of school leadership therefore requires the ability of leaders to create continual and meaningful professional learning opportunities for all their teachers (MacLeod, 2020; Printy, 2008; Tulowitzki et al., 2020).

It is important to point out that, the literature on school leadership has established empirical evidence that school leaders make a difference in student outcomes, indirectly, and most powerfully, through influencing working conditions and fostering effective teaching and learning (e.g., Darling-Hammond & Richardson, 2009; Hallinger, Piyaman, & Viseshsiri, 2017; Pan, Nyeu, & Cheng, 2017; Printy, 2008; Qian & Walker, 2013). One of these paths, which is the link between principal leadership and teacher professional learning has gained prominence in recent years. An emerging body of research on the role of school leadership in teacher learning has yielded conclusions that principal leadership's influence on teacher professional learning is largely mediated by teacher attitudes such as teacher trust, agency (Hosseingholizadeh, 2020; Hallinger, Liu, & Piyaman, 2019; Liu, Hallinger, & Feng, 2016), collaboration and communication (Li, Hallinger, & Ko, 2016; Li, Hallinger, Kennedy, & Walker, 2016; Lijuan & Hallinger, 2016;), and leadership (Pan & Chen, 2020). In the present study, therefore, we examine the nature of the relationship between principals' learning-centered leadership and teacher learning in Iranian schools, along with the mediating role of teacher trust and knowledge sharing (KS), to identify the mechanism through which school leadership

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influences instruction. Knowledge sharing as a key for developing professional learning communities is linked to relationships among teachers that can consequently help them solve a variety of problems related to teaching and learning (Farooq, 2018; Holste & Fields, 2010; Hou, Sung, & Chang, 2009). Thus, it is expected that knowledge sharing among teachers needs to be organizationally supported by leadership (Rismark & Sølvberg, 2011) especially by shaping the conditions that foster a culture of trust. Trust is widely accepted as an important enabler of knowledge sharing through developing collegial relationships among teachers (Gray, Kruse, & Tarter, 2016; Lee, Zhang, & Yin, 2011; Pedersen, 2019) as it may lead to the exchange of learning and experiences (Asrar-ul-Haq & Anwar, 2016; Farooq, 2018; Usoro, Sharratt, Tsui, & Shekhar, 2007).

While scholars have provided evidence of the positive influences of principal leadership on teacher learning, a vast majority of such work has focused extensively on education and school systems in the western context. Whether and to what extent principals in non-western societies could make a difference for teacher professional learning (TPL) remained unexplored. Supporting this, several scholars asserted the necessity of exploring the influence of leadership on teacher learning, while taking cultural differences into account (e.g., Hosseingholizadeh, 2019; Bajunid, 1996; Dimmock, 2011; Hallinger & Walker, 2015; Pan & Chen, 2011). According to Pan (2008), the fact that the link between school leadership and teacher learning receives support from such diverse cultural contexts provides even greater confidence in the efficacy of this relationship. Scholars have also linked leadership practices associated with specific cultural dimensions in the context of education (Bissessar, 2018; Karadag, 2020; Kaur & Mohammad, 2020). In line with previous literature (e.g., DuFour, 2002; Li, Hallinger, Walker et al., 2016; Hallinger et al., 2017; Lee et al., 2011; Li, Hallinger, Ko et al., 2016, 2016b; Liu et al., 2016; Louis & Murphy, 2017; Pan & Chen, 2020), this research extends prior research by exploring and verifying the relationships between learning-centered leadership, teacher trust and knowledge sharing behaviors (exogenous variables), and teacher professional learning (endogenous variable), which were handled with the help of the SEM technique.

1.1. Context of study: education system and school leadership in Iran

Consistent with other developing societies of Asia, Africa, and Latin America, the educational system in Iran is a highly centralized political and ideological system. The roles and responsibilities of school leaders are defined by policymakers, in line with the country's political, socio-economic, cultural approaches established by the government after the Islamic Revolution (Sajjadi, 2015; Hosseingholizadeh, 2019). Following the Islamic Revolution of 1979 and in line with global trends in educational development, educational reforms in Iran encompass the four political, social, economic, and cultural discourses of the government, including Construction Discourse (1987–1995), Reformation Discourse (1987–2005), and Fundamentalism Discourse (Justice Seeker) (2005–2012), which controlled and directed the process of change in the education system (Sajjadi, 2015). More specifically, the Fourth Five-Year Development Plan (2005–2010) envisaged upgrading the quality of the educational system at all levels, as well as reforming the national education curricula (referred to as the National Curriculum Document). The Fundamental Reform Document of Education (FRDE) is intended to serve as the cornerstone of future education development initiatives outlined in the 2025 vision (entitled *National EFA Report of the Islamic Republic of Iran 2000–2014*).

National curriculum reforms initiated in 2011 asked teachers to shift their instruction from "teacher-centered" and "content-centered" to "student-centered" approaches (Aliakbari & Sadeghi, 2014). Therefore, teachers are now encouraged to collaborate with peers and engage in professional dialogue to develop a school-based curriculum. It is clear that school leaders are generally expected to play a more active role in instructional leadership (Pont, Nusche, & Moorman, 2008), and as learning leaders, principals in Iran have to be able to shape the conditions that foster trust and knowledge-sharing among teachers. In many schools in Iran, principals exert significant influence on matters of school improvement, as well as on teachers' performance through working on leadership and management matters, such as organizing processes of quality management (like the *Tadbir* program in primary schools). According to the *Tadbir* program, teachers are expected to engage in learning programs (e.g., lesson study, action research, peer observation, and discussions on instructional issues through teachers' council meetings) within their professional learning community to improve instruction through ongoing teacher collaboration (Hosseingholizadeh, 2020). Although in many cases the teachers are free to teach as they deem appropriate, Iranian educational reforms still often face resistance from teachers because most of the proposed changes derived from FRDE (e.g., school-based management, reforming the curriculum, descriptive evaluation of student performance) have not emerged from a real-world understanding of how schools function (Mirarab Razi, 2015). As Pranckūnienė and Ruškus (2016) note, such ill-conceived and poorly planned changes introduced in an educational system, together with lack of consensus and stability, are singled out as the most important causes of a lack of institutional trust. Nevertheless, while principals in Iran work in a low-accountability context and managing the tension between managerial and instructional matters continues to be an issue for them, improving teaching and learning remain integral to the work of the school principal and educational leadership more broadly (Hallinger et al., 2017, 2019).

Considering traditional values such as collectivism (Cray, McKay, & Mittelman, 2019; Karadag, 2020; Yeganeh & Su, 2007), and influenced by the three important factors of national identity, Islamic identity, and modern identity (Rabeie, Fayyaz, Mahrouzadeh, Bakhtiari, & Khorsandi Taskooh, 2019), principals play a vital role in the conduct of teaching and learning at the school level in Iran. In this setting, ensuring a collegial and collaborative environment for teachers is commonly articulated by successful principals as an important aspect of instructional leadership, because it reduces bureaucracy and decentralizes decision-making (Hosseingholizadeh, 2019). In this regard, the results of a systematic review on educational leadership and management (EDLM) research in Iran by Hosseingholizadeh (2020) indicated there is a significant and positive correlation between ethical/moral leadership and teacher-related outcomes (e.g., social capital, psychological capital, organizational commitment, citizenship behavior, and job satisfaction) and school-related outcomes (e.g., organizational trust, justice, learning, virtue, well-being, and health). Ethical/moral leadership is essentially based on the foundation of Iranian principals' Islamic ethics and values. However, evidence of principals' impact on teacher learning in the context of highly centralized education systems (like that of Iran) has a relatively short history (e.g., Abdollahi & Karimi, 2013; Hallinger et al., 2017; Hosseingholizadeh, 2019; Khany & Amoli, 2013; Omidifar, 2013).

1.2. Conceptual framework

The conceptual framework (Fig. 1) of this research is based on the theoretical and empirical literature of the past four decades that links

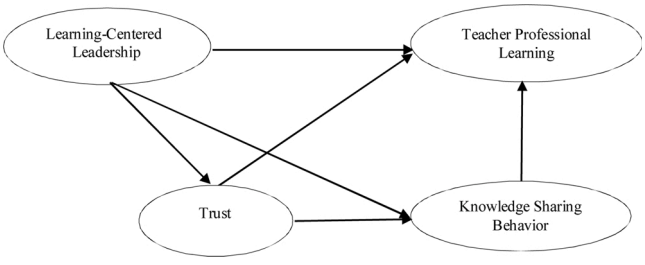


Fig. 1. The conceptual framework of the study.

principal leadership with school working conditions, teacher behaviors and practices, and student learning outcomes (e.g., Bossert, Dwyer, Rowan, & Lee, 1982; Goddard, Goddard, Bailes, & Nichols, 2019; Hallinger, Bickman, & Davis, 1996; Liebowitz & Porter, 2019; Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011). Based on these works, in the present study, we propose that the principal is a key agent in the school to promote TPL. Principals' various leadership practices can lead to greater teacher workplace learning. Particularly, we suggest that principals' learning-centered leadership practice can, both directly and indirectly, influence the extent to which teachers take part in school-wide professional learning activities. Teachers' knowledge sharing behaviors and their trust in colleagues bear the considerable potential to influence teacher learning and to play the role of enabling mechanisms through which principals influence TPL.

The following section defines each concept in the conceptual framework and poses hypotheses about the relationships among them.

1.2.1. Teacher professional learning

The education in today's schools requires teachers to be high-level knowledge workers who constantly advance their professional knowledge, as well as that of their profession. While traditional professional development activities composed of short term seminars and conferences are still common in educational settings, these types of learning activities have only a small impact on teaching and learning (Pan & Chen, 2020). Contrary to traditional teacher preparation programs, a contemporary perspective on professional development suggests that teacher learning takes place through the collaboration and collective activities within the organization, not as a set of isolated exercises. Thus, there is a significant need for teacher learning in which teachers interpret new ideas through both their past experiences and their established beliefs about learning and teaching (Schleicher, 2012). The concept of teacher professional learning has gradually shifted from formal, isolated, one-off workshops, and university coursework to both informal and formal, collaborative, developmental, and job-embedded learning. This perspective underscores the school as a "learning community" for teachers (Kulophas & Hallinger, 2020).

Educational scholars have recommended school-based professional learning that focuses on real classroom problems, engages all teachers, and fosters collaboration among teachers (Elmore & Burney, 1997). As Pan and Chen (2020) noted, professional learning is required to ensure skillful teaching and thereby meet heightened expectations for student learning. Jusinski (2019) emphasized that such professional learning enables teachers to equip themselves with the necessary knowledge and practice to help students gain 21st-century competencies. This offers the opportunity to move beyond "continued professional development" to an effective culture of "professional learning," where educators can create professional knowledge through interaction with challenges and make new meanings (Timperley, 2011). In such a setting, teachers are expected to be reflective practitioners, thinkers, inquirers, and conceptualizers who engage in building and sharing knowledge to develop new instructional practices (Rismark & Sølvberg, 2011).

One of the key challenges for the teaching profession is to strengthen the "technical core" of its professional practices, which requires the development of educational ecosystems that support the creation, accumulation, and diffusion of this professional knowledge. It is important to identify the conditions in which different types of learning organizations can emerge, as well as how teachers can share the knowledge that they have accumulated during their working lives (Schleicher, 2012). The professional learning environment provides teachers with extended opportunities to learn through a variety of activities, engaging them with new knowledge that typically involves pedagogical content and assessment knowledge and their implications for practice (Timperley, Wilson, Barrar, & Fung, 2008). One of the key features of teachers' communities in school is that they plan lessons for subject matter teaching and implementation of new teaching methods or reforms (Vangrieken, Meredith, Packer, & Kyndt, 2017). This perspective on professional learning emphasizes the school as a learning environment for teachers as well as students, highlights the role of cultural norms of collaboration and collegiality, and identifies a broader range of activities through which teachers engage with the changing knowledge base in teaching and learning (Liu et al., 2016). In the present study, therefore, the concept of TPL involves school-based teacher learning activities that include both formal structures such as mentoring programs, research groups, and mentoring programs, and informal interactions among colleagues during collaborative planning, informal mentoring, peer teaching, and shared assessment (Hallinger et al., 2017). Thus, professional learning is increasingly conceptualized as a dynamic, ongoing, interactive, developmental process, rather than as a series of isolated activities (Liu et al., 2016). Drawing on previous research (e.g., Hallinger et al., 2017; Liu et al., 2016), it consists of four dimensions: collaboration, reflection, experimentation, and reaching out to the knowledge base.

1.2.2. Knowledge sharing behavior

Knowledge sharing (KS), a component of knowledge management, is linked to relationships among co-workers that promote information exchange and learning (Holste & Fields, 2010). In this study, we consider knowledge sharing as the provision of task knowledge, experiences, skills, and know-how (such as student achievement data), and teaching practices to help others and to collaborate to solve problems, develop new ideas, or implement policies or procedures (Farooq, 2018; Hallam, Smith, Hite, Hite, & Wilcox, 2015; Lee et al., 2011; Usoro et al., 2007; Wang & Noe, 2010). Given the importance of social relationships, interaction, and communication between participants for this type of collaboration (Blankenship & Ruona, 2008; Farooq, 2018; Lee et al., 2011; Usoro et al., 2007), it is expected that knowledge sharing among teachers can consequently help them solve a variety of problems related to teaching and learning (Farooq, 2018; Hou et al., 2009). According to Chen, Fan, and Tsai (2014), the knowledge sharing process within a community of teaching professionals is viewed as a social exchange process. It can occur through written correspondence or face-to-face communications through networking with other experts or documenting, organizing, and capturing knowledge for others (Wang & Noe, 2010). As suggested by Shih and Lou (2011), teachers' professional knowledge, teaching techniques, materials, class management, and evaluation knowledge are the major topics of such knowledge sharing, and in-service training meetings, school meetings, phone calls, leisure time, and the Internet were the mechanisms for KS among teachers. In this way, the utilization of communities of practice facilitates teachers' knowledge sharing by creating opportunities for members to interact and exchange best practices (Kosmas, 2017; Tseng & Kuo, 2014). Rismark and Sølvberg (2011) found that, as a key for developing professional learning communities (PLC), KS needs to be organizationally supported by leadership. Thus, to develop their schools as learning organizations, principals need to provide moral support to staff, build a common vision, and communicate this vision as a guide for the school's day-to-day operations (Pan, 2008). We, therefore, expect that teachers' KS would positively influence their involvement in professional learning activities (Hypothesis 1).

1.2.3. Trust

Trust is a concept with multifaceted definitions, yet fundamentally, no consensus has been reached about what trust means (Farooq, 2018; Rutten, Blaas-Franken, & Martin, 2016; Usoro et al., 2007). In the present study, our definition is based on the conceptualization by Hoy et al. (2006: 429), who defined trust as "one's vulnerability to another in terms of the belief that the other will act in one's best interests" (Hallam et al., 2015; Li, Hallinger, Kennedy et al., 2016). In an educational context, this type of trust is dependent upon a reciprocal relationship, marked by the willingness to be vulnerable to and assume risk with the confidence that the other party will possess some resemblance of benevolence, competence, honesty, openness, reliability, respect, care,

wisdom, and educational ideals (Walker & Ko, 2011).

Our conceptualization of trust involves three dimensions: calculative trust, relational trust, and faith trust (Hallinger et al., 2017). Calculative trust is based on one's assessment of the personal costs and benefits in interpersonal exchanges (Poppo, Zhou, & Li, 2016). Relational trust refers to the interpersonal relationship between individuals and is defined as a willingness to take the risk based on the expectation of others' behavior (Farooq, 2018). Thus, relational trust is highly contextual and determined by individuals, situations, and organizational culture within individual schools (Pranckūnienė & Ruškus, 2016). With high relational trust, partners develop a mutual understanding and shared identity where they "think like" the other, "feel like" the other, and "respond like" the other (Poppo et al., 2016). Faith trust refers to confidence in one's colleague(s), based on shared beliefs and values (Hallinger et al., 2017).

Trust functions as both a source of social capital and a collective asset (Fink, 2016), as well as an enabling social condition and important organizational factor to facilitate the development of productive social relationships that underlie successful school improvement (Gray et al., 2016; Li, Hallinger, Kennedy et al., 2016; Pedersen, 2019). Trust is widely accepted as an important enabler of knowledge management and is frequently argued to be important to knowledge sharing, as it may lead to the exchange of learning and experiences (Asrar-ul-Haq & Anwar, 2016; Farooq, 2018; Usoro et al., 2007). Rutten et al. (2016) confirmed that a high level of trust leads to a high level of KS, while a lower level of trust leads to less KS. Therefore, we hypothesize that there is a positive relationship between teachers' trust levels and their KS behaviors (Hypothesis 2)

Previous studies have indicated that trust is a key component of and important facilitating factor related to organizational learning, as well as teachers' instructional practices and engagement in work, and it has long been posited as essential in the development of collegial relationships (Gray et al., 2016; Lee et al., 2011; Pedersen, 2019;). The building of trusting relationships between teachers, students, administrators, and parents is critical, and often contingent upon networks focused on student and adult learning in the school as a professional learning community within a culture of leadership (Imig et al., 2019). Trust acts as a type of "connective tissue" that binds teachers together, supporting collaborative activities and movement towards collective goals (Li, Hallinger, Kennedy et al., 2016) and student achievement (Hallam et al., 2015). Research results have verified that effective professional learning that fosters teacher collaboration emerges in schools with a culture of trust, risk-taking, and support. This is because trust facilitates collaboration by enabling teachers to be open with sensitive information that might cause vulnerability. Thus, collaboration and trust depend upon one another (Hallam et al., 2015; Kalkan, 2016; Lee et al., 2011; Pedersen, 2019). Van Themaat (2019) and Yin, To, Keung, and Tam (2019) also showed that trust in colleagues exerted a positive effect on TPL. Lee et al. (2011) indicated that all factors of PLC, as well as faculty trust in colleagues, could significantly and positively affect teachers' collective efficacy around instructional strategies. Thus, we propose that trust has a direct and positive relationship with TPL (Hypothesis 3).

1.2.4. Learning-centered leadership

The conceptualization of learning-centered leadership shares common roots with instructional leadership, learning-focused leadership, and leadership for learning—all of which assume that "learning" should be the key outcome of leadership in schools (Hallinger et al., 2017). Bush (2003) used "learning-centered leadership" as a synonym for "instructional leadership," and "learning-centered leaders" interchangeably with "instructional leaders" (Hallinger et al., 2016). Hallinger (2009) asserted that leadership for learning should be grounded in the concept of instructional leadership, with selected features of transformational, distributed, and situational leadership models as well. Hallinger (2009, 2011) defined learning-centered leadership as principals' intentional endeavors to support, inspire, guide, and direct teacher learning in such a way that enhances student learning outcomes and school improvement (Liu et al., 2016). Murphy, Elliott, Goldring, and Porter (2006) used six dimensions to characterize learning-centered leadership, including a vision for learning; instructional, curricular, and assessment programs; communities of learning; resource acquisition and use; organizational culture; and social advocacy. Pan and Chen (2020) also suggested five principles of leadership for learning, including a focus on learning, an environment for learning, a learning dialogue, shared leadership, and mutual accountability. Drawing on the five cardinal principles developed in the Carpe Vitam Leadership for Learning Project, MacBeath (2020) argued that leadership for learning practice is based on a focus on learning in three interconnected layers of student learning, professional learning, and community learning. It also involves creating conditions favorable for learning as an activity, creating a dialogue about leadership and learning, sharing leadership, and a shared sense of accountability. Taken together, this review of the literature suggests that a distinctive feature of LCL is capacity building to promote the learning of all members of the school community (Liu et al., 2016).

Drawing on a framework developed by Hallinger (2009, 2010, 2011), in the present study we conceptualized learning-centered leadership in terms of four dimensions: *building a learning vision* means that principals articulate and communicate a vision for teacher learning; *modeling* refers to principals' effort to support the values of openness, risk-taking, and collaboration through their behavior; *providing learning support* implies that the principal creates the necessary conditions in school to support teacher learning; and *managing the learning program* means that leaders develop, manage and monitor a program for teacher learning (Hallinger et al., 2017).

DuFour (2002) points out that, as learning-centered leaders, school principals should shift their attention from how teachers teach to whether students learn, and to what extent teaching leads to better student learning. Principals need to understand that "a culture of school trust is often as important as socioeconomic level in promoting learning and. . . a necessary essential condition for effective PLC" (Gray et al., 2016: 877). A leader is responsible for developing trust among employees and motivating them to share and transfer their knowledge (Asrar-ul-Haq & Anwar, 2016). Liou's (2010) review of literature on trust and social capital showed the importance of school leaders who promote higher levels of trust among teachers—thus, the school principal is best positioned to influence school trust levels (Hallam et al., 2015). Recent empirical works showed evidence of the substantial influence of principals' leadership practices to improve teaching and learning through the development of teacher trust (Hallinger et al., 2019; Li, Hallinger, Kennedy et al., 2016; Liu et al., 2016). We, therefore, propose that principals' learning-centered leadership is directly and positively related to teacher trust (Hypothesis 4)

Evidence also indicates that leadership plays a significant role in promoting KS and transfer in school settings (e.g., Asrar-ul-Haq & Anwar, 2016; Lee et al., 2011; Liou, 2010; Louis & Murphy, 2017). For example, when examining the relationship between the leader as the knowledge builder, trust in the leader and the team, KS, and team performance, Lee et al. (2011) found that by building the team's expertise, leaders enhance team members' willingness to rely on and disclose information in the team, which in turn increases team KS. Booth (2012) indicated that KS is cultivated and sustained through a clear purpose and common identity, multiple options for action, and opportunities for social learning. Such a learning environment can be developed and sustained by principal leadership practices with a specific focus on learning (Li et al., 2016). Thus, we, propose that principals' learning-centered leadership is positively related to teachers' KS behaviors (Hypothesis 5).

The mediated-effects models of leadership for learning presume that the main impact of school leadership is achieved not through the direct interaction of the principal with students, but rather by the leader's efforts at shaping the school culture and structure and facilitating teacher effectiveness (Li, Hallinger, Kennedy et al., 2016). Liu et al.

(2016) also affirmed a positive association between LCL and TPL, and highlighted teacher trust as a significant mediator in this relationship. Their findings support the salience of trust as an enabling factor in fostering teacher learning and capacity development in schools. Murphy (2002) proposed that leadership can provide professional learning opportunities for teachers by creating an environment conducive to KS. Louis and Murphy (2017) found that principal trust was directly related to teachers' KS behaviors, and indirectly related to school-level learning. Li et al. (2017) empirically examined the mediating effects of relational school capacity factors, such as trust, on the relationship between principal leadership and TPL. Their findings affirmed the role and nature of trust, communication, and collaboration in the mediated relationship. Yin and Zheng (2018) also showed that leadership practices had positive effects on faculty trust and PLC, and trust in colleagues positively mediated the relationships between leadership practices and the four components of PLC. We, therefore, hypothesize that trust (Hypothesis 6) and KS behaviors (Hypothesis 7) play a mediating role in the relationship between principals' learning-centered leadership and TPL.

2. Methodology

This study employed a cross-sectional quantitative survey design to examine the nature of the relationships among principal leadership, trust, knowledge sharing, and TPL. In this section, we discuss the sample of schools and teacher respondents, the data collection instrument, and our approach to data analysis.

2.1. Sample and data collection procedure

The study was conducted using survey data from teachers in 121 primary schools, out of a total of 240 public elementary schools distributed in three districts in the city of Mashad, Iran. We used the Proportional Stratified Sampling design (Cochran, 1977) to ensure a representative sample of primary schools from all seven districts in Mashhad. We obtained 886 valid questionnaires from teachers yielding a 62.4 % response rate for teachers. It is worth mentioning that schools in Iran are single-gender institutions. In this study, 46 % of the primary schools were single-sex schools serving boys, while 54 % served girls. Since female teachers can teach in the boys' schools as well, about 89 % of the included teachers were female and 11 % were male. This is typical of the teacher population across primary schools in Iran (see Table 1).

2.2. Variables

The Learning-Centered Leadership (LCL) scale was employed as the main independent variable for this study. This instrument was developed by Hallinger et al. (2017) to measure the extent to which principals focus on teaching and learning. It consisted of 25 items distributed in four dimensions: building a learning vision (six items), providing learning support (eight items), managing the learning program (six items), and modeling (five items). All items are measured using a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). The LCL scale was translated into Persian and adapted into the Iranian school context by a team of experts in translation and subject matter. According to Brislin's (1970) back-translation method, the English version was first translated into Persian, and then the Persian version was translated back into English by a professional translator. Finally, the two versions of the instrument (original language and back-translated version) were compared for concept equivalence.

The teacher professional learning scale was used as the main dependent variable to measure the extent to which teachers take part in workplace professional learning. The scale was originally developed by Liu et al. (2016), consisting of 25 items that grouped under four concepts: collaboration, reflection, experimentation, and reaching out to the knowledge base. All items are measured using a five-point Likert type scale (ranging from 1 = strongly disagree to 5 = strongly agree). The TPL scale was translated and adapted into the Iranian culture and language using Brislin's (1970) back-translation method.

The scale measuring teacher trust was adapted from Hallinger et al.'s (2017) instrument, which includes 17 items assessing three dimensions of trust: calculative trust, relational trust, and faith trust. All items are measured using a five Likert-type scale (ranging from 1 = almost never to 5 = almost always). This scale was translated and adapted into the Iranian culture and language using Brislin's (1970) back-translation method.

The scale for knowledge sharing behavior (KSB) drew on eight items from Chennamaneni, Teng, and Raja (2012) and Hsu, Ju, Yen, and Chang (2007) which includes 8 items as indicators of the construct. In this study, KSB was analyzed as a first-order, uni-dimensional construct. All items were rated on a five-point Likert-type scale (ranging from 1 = strongly disagree to 5 = strongly agree). This scale was translated and adapted into the Iranian culture and language using Brislin's (1970) back-translation method.

2.3. Data analysis

We conducted confirmatory factor analysis (CFA) to define the main constructs and assess the construct validity of the measurement model (Table 2). To do this, the second-order CFA was done using AMOS 22. From the CFA result of this study, the factor loadings for the four variables (i.e., LCL, TT, KSB, and TPL), based on the teacher data, ranged from 0.80 to 1. These analyses also indicated that all the average variance extracted (AVE) for the constructs exceeded 0.59.

We used several fit indices drawn from the SEM framework to assess the fit of the proposed conceptual model, including comparative fix index (CFI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), and chi-square (c2) (Hu & Bentler, 1999). All of the model-fit indices specified earlier were acceptable (i.e., $\chi 2/df = 2.65$ (<3); RMSEA = 0.043 (<0.08), CFI =

Table 1
Demographic information for the full sample.

Characteristics	Teacher sample (886) n	%
Gender		
Male	97	10.9
Female	789	89.1
School Type		
Girl	408	46
Boy	478	54
District		
4	383	31.9
5	347	39.2
6	256	28.9
Years of experience		
< 2 years	6	0.7
2–5 years	17	1.9
6–10 years	54	6.1
> 10 years	809	91.3

Table 2
Goodness-of-Fit Indicators of Models for the four Constructs.

Construct	X^2	df	GFI	CFI	NFI	PNFI	RMSEA
Learning-Centered Leadership	430.32	269	0.78	0.92	0.82	0.081	0.71
Teacher Professional Learning	2392.75	320	0.83	0.96	0.95	0.05	0.086
Trust	1099.22	116	0.87	0.97	0.96	0.05	0.09
Knowledge sharing behavior	274.12	20	0.96	0.96	0.96	0.06	0.12

0.992, (>0.90) and SRMR = 0.013 (<0.05) (Fig. 2).

We also calculated Cronbach's alpha coefficients to evaluate the internal consistency of the four constructs and their sub-dimensions (Hair, Ringle, & Sarstedt, 2013). As shown in Table 3, Cronbach's alpha coefficients for all variables ranged between 0.817 and 0.932. The results of the Cronbach's alphas confirm the high reliability of all of the constructs, including LCL (α = 0.87), TT (α = 0.90), KSB (α = 0.88), and TPL (α = 0.90). According to these analyses, the measurement model was consistent with Liu et al.'s (2016) and Hallinger et al.'s (2017) research, and met the desired standards of reliability and construct validity.

To define the measurement model and to analyze the path model for the relationships between the four constructs under investigation, we employed structural equation modeling (SEM). The measurement model for the four constructs was validated by CFA, indicating an acceptable data fit (see Table 3). SEM was complemented by the use of the bootstrapping method recommended by Preacher and Hayes (2008) to verify the nature of relationships within the model. We used bootstrapping to reaffirm both the direct and indirect relationships between the principal's LCL and TPL, focusing on TT and TKS (Preacher & Hayes, 2008).

Table 3
Descriptive statistics for teachers data.

Construct / statistics	Teachers (n = 886)					
	Mean	SD	Loading	AVE	CR	α
Learning-Centered Leadership	4.39	0.64	–	–	–	0.97
Builds a learning vision	4.42	0.65	0.98	–	–	0.91
Provides learning support	4.35	0.67	0.96	–	–	0.91
Managing learning program	4.39	0.68	0.92	–	–	0.91
Modeling	4.45	0.67	0.92	–	–	0.90
Teacher Professional Learning	4.35	0.46	–	0.80	0.94	0.90
Experimentation	4.36	0.53	0.81	0.76	0.85	0.79
Reach Out to The Knowledge Base	4.23	0.56	0.82	0.71	0.90	0.80
Collaboration	4.53	0.48	0.98	0.69	0.79	0.82
Reflection	4.32	0.49	0.95	0.77	0.87	0.83
Trust	4.50	0.46		0.76	0.90	0.90
Relational Trust	4.35	0.56	0.83	0.64	0.86	0.79
Calculative Trust	4.58	0.45	0.93	0.59	0.83	0.77
Faith trust	4.6	0.5	0.85	0.63	0.85	0.87
Knowledge sharing behavior	4.35	0.54	1	0.78	0.88	0.88

Notes: SD: Standard Deviation; CR: Composite Reliability; AVE: Average Variance Extracted.

3. Results

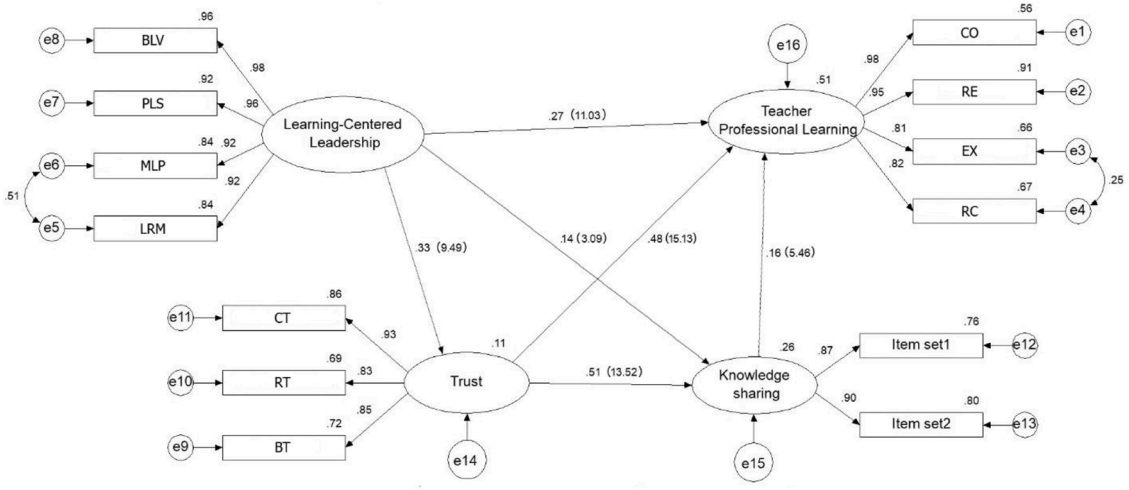
3.1. Descriptive analysis of teacher perceptions

Analysis of the descriptive statistics revealed that teachers rated the principals highly on learning-centered leadership (see Table 3). Among the four LCL subscales, while teachers' ratings in the *modeling* dimension were the highest (M = 4.45, SD = 0.67), the mean scores in the *providing learning support dimension* were the lowest (M = 4.35, SD = 0.67). These results highlight the role of principals in supporting the values of openness, risk-taking, and collaboration in the school from the teachers' perspective.

The mean scores for the constructs of TT, KSB, and TPL were all higher than 4.00, ranging from 4.35 (SD = 0.46) to 4.45 (SD = 0.54), respectively (Table 3). The mean score on the TPL scale in the *collaboration* dimension in primary schools rated significantly the highest (M = 4.53, SD = 0.48), while the *reaching out to the knowledge base* dimension was the lowest (M = 4.23, SD = 0.56). Menwhile, the highest mean score on the TT scale was in the *faith* dimension (M = 4.6, SD = 0.50). Like for the TPL variable, the mean scores for KSB were relatively high (M = 4.35, SD = 0.54). Concerning the highly centralized education system in Iran, it was interesting to note that principals in primary schools often play an important role in building a learning vision, providing learning support, managing learning programs, and engaging teachers in collaboration and knowledge sharing by reducing bureaucracy and decentralizing decision-making.

3.2. The relationships between learning-centered leadership and teacher professional learning

A structural equation model was used to test the hypothesized mediation relationships between LCL and TPL. Following the conceptual model, there is a direct relationship between LCL and TPL when considering two mediating variables: trust and knowledge sharing behavior (Fig. 1). Results (Fig. 2) indicate that the LCL construct had a significant direct and indirect association with TPL (β = 0.27, p < 0.05). The path model had an acceptable model fit (χ^2/df = 2.54, p = 0.72; GFI = 0.980; AGFI = 0.960; CFI = 0.992; NFI = 0.990; RMSEA = 0.043). As shown in Table 4, bootstrapping estimates further affirmed the significant direct relationship between LCL and TPL (β = 0.27, p < 0.05). This means that principals' engagement in LCL practices is likely to increase teachers' participation in professional learning activities, including collaboration, reflection, experimentation, and reaching out to the knowledge base.



χ^2/df= 2.54, GFI=.980, AGFI=.960, CFI=.992, RMSEA=.043

Fig. 2. Path relationships among the variables in the structural equation model.

Table 4
bootstrapping results for the standardized effects of indirect effects of principal efficacy on teacher professional learning through mediator variables.

Path Coefficient		Product of coefficients		95 % Bootstrap CI		2-tailed sig (p)
		SE	Z	Lower	Upper	
Standardized Indirect Effects						
LCL-TT-TPL	0.18	0.03	6.21	0.14	0.24	***
LCL-TT-TKSB-TPL	0.08	0.02	4.47	0.05	0.11	***
LCL-TKSB-TPL	0.02	0.01	2.00	0.01	0.04	***
TT-TKSB- TPL	0.09	0.03	3.65	0.06	0.15	***
Standardized Direct Effects						***
TT-TPL	0.48	0.03	15.13	0.42	0.54	***
TT-TKSB	0.51	0.04	13.52	0.43	0.57	***
TKSB-TPL	0.16	0.02	5.46	0.09	0.23	***
LCL-TPL	0.27	0.02	11.03	0.23	0.33	***
LCL-TT	0.33	0.03	9.49	0.24	0.41	***
LCL-TKSB	0.14	0.05	3.09	0.04	0.18	***

Notes: 2,000 bootstrap samples. CI = confidence interval; LCL: learning-center Leadership; TT: Teacher Trust; TKSB: Teacher knowledge sharing behavior; TPL: Teacher Professional Learning. ***$p < 0.001$.

Moreover, the path model indicates that the relationship between LCL and TPL is also mediated by TT and KSB. While learning-centered leadership was found to be less related to knowledge sharing behavior ($\beta = 0.14$, $p < 0.01$), there was a strong positive association ($\beta = 0.33$, $p < 0.001$) with teacher trust, meaning that when principals exert LCL practices, teachers are more likely to develop trust and to share their knowledge and experiences with their colleagues. These results provide support for Hypotheses 4 and 5. The path coefficient from teacher trust to teacher professional learning was statistically significant ($\beta = 0.48$, $p < 0.01$) confirming Hypothesis 3, also indicating a significant direct relationship with knowledge sharing behavior ($\beta = 0.51$, $p < 0.01$). In turn, knowledge sharing behavior showed a small and direct association with teacher professional learning ($\beta = 0.16$, $p < 0.01$). The relationship between teacher trust and teacher professional learning was relatively small but still mediated by knowledge sharing behavior ($\beta = 0.09$, $p < 0.01$), confirming Hypothesis 1. These results generally suggest that an increase in trust among teachers can improve the likelihood of knowledge sharing behavior and engagement in workplace learning.

More specifically, the path model shown in Fig. 2 indicates that teacher trust and knowledge sharing behavior play a mediating role in the relationship between learning-centered leadership and teacher professional learning ($\beta = 0.08$, SE = 0.02, 95 percent bootstrap CI (0.05, 0.11), $p < 0.001$), confirming Hypotheses 6 and 7. Taken together, the SEM model results affirmed both the "direct path coefficient" of LCL to TPL ($\beta = 0.27$, SE = 0.02, 95 percent bootstrap CI (0.23, 0.33), $p < 0.001$) as significant, as well as the "indirect path coefficient" of LCL to TPL was ($\beta = 0.48$, $p < 0.001$), which support the view that the principal's learning-centered leadership is related to teacher learning.

4. Discussion

The present research aimed to investigate the influence of school principals' learning-centered leadership practices on teachers participating in professional learning, as well as the mediating role of teachers' trust and knowledge sharing behaviors, by employing structural equation modeling on a dataset of 886 teachers from 121 primary schools in Iran. In this section, we describe the limitations of this study, interpret the main findings, and provide recommendations for future policy, practice, and research.

4.1. Interpretation of the findings

Our results show evidence of a positive relationship between knowledge sharing behaviors and TPL, meaning that when teachers share knowledge, they take part in workplace professional learning. These results affirm the theoretical and empirical evidence regarding how teachers learn. Through school-based professional learning, teachers are encouraged to reflect on and improve their practices (Timperley, 2011). This does not take place in an isolated environment, though—rather, teachers' sharing of knowledge with colleagues is highly recommended for professional improvement (Shih & Lou, 2011). What makes professional learning more effective than professional development is its strong emphasis on teacher groups that collaborate to share knowledge and practices (Rismark & Sølvberg, 2011). Our research, therefore, supports the theory suggesting that supporting a work environment where teachers share their knowledge promotes increased learning activities among teachers (Kosmas, 2017).

Trust emerged as another key concept influencing both TPL and KS. Two of the largest effect sizes in the model emerged between trust and workplace learning and KS. While research has already suggested that KS is a prerequisite for teacher learning, our results further indicate that trust is key for creating a school environment where teachers feel safe engaging in professional learning activities that encourage knowledge sharing. Available international research provides results consistent with our findings. For instance, studies from both Turkey (Karacabey, Bellibaş, & Adams, 2020) and Hong Kong (Hallinger & Lee, 2014) illustrate that trust among teachers plays a substantial role in fostering workplace professional learning in schools. Teachers are expected to reveal sensitive information that may put them in a vulnerable position when engaging in professional learning activities (Hallam et al., 2015), and a school culture that is based on trust would encourage teachers to take such risks without fear (Kalkan, 2016).

Our research provides evidence that school leadership supports school improvement endeavors by supporting trust and KS among teachers, as well as school-based professional learning. This suggests that leaders who support teaching and learning are likely to enhance teachers' willingness to rely on each other and disclose information to their peers (Lee et al., 2011), both of which are necessary for creating effective professional learning. Similarly, Hallinger et al. (2017) indicated that principals' LCL practices enhanced both teacher trust and professional learning in Thailand. Other international research from Turkey (Karacabey et al., 2020), Hong Kong (Li, Hallinger, Walker et al., 2016), and China (Liu et al., 2016) provide consistent evidence that principals' emphasis on learning creates a school environment where teachers trust each other and engage in professional learning. Taken together, all of these results indicate that principals' focus on learning is key for school improvement in both western and non-western contexts.

Finally, our findings indicate an indirect relationship between LCL and TPL, mediated by sharing knowledge and teacher trust. More specifically, we found that principals' emphasis on learning first increased trust and knowledge sharing for teachers, which then translated directly into better engagement in professional learning activities. Trust is particularly important as a mediating organizational factor. This suggests that principals could use trust as a means to support growth in teacher capacity. When the principal acts as a leader who prioritizes student learning, teachers are more likely to develop trust with each other; and once trust is established, teachers are ready to organize and engage in professional learning activities that support sharing knowledge (Liu et al., 2016).

4.2. Conclusion

One of the main interests of EDLM research is to provide an understanding of how school principals make a significant difference in student outcomes by creating a professional learning environment that provides teachers with extended opportunities to develop a knowledge base in teaching and learning. This highlights the role of cultural norms of collaboration and collegiality, as well as building trust and credibility to share knowledge (e.g., Darling-Hammond & Richardson, 2009;

Hallinger et al., 2017; Liu et al., 2016; MacLeod, 2020; Pan, 2008; Pan et al., 2017; Pranckūnienė & Ruškus, 2016; Printy, 2008; Qian & Walker, 2013; Timperley et al., 2008). In this study, the results are directly in line with previous findings that provide empirical evidence for the influence of the principal's LCL on shaping key organizational features such as trust, knowledge sharing, and professional learning in schools. Our results provide evidence that a high level of collaboration and trust among teachers can be seen as an opportunity to involve teachers in sharing knowledge and building the knowledge base across a school. In the study sample, it appears that the majority of the teachers were encouraged to engage with their colleagues informal learning programs in their schools, such as lesson studies. In Iran's centralized, bureaucratically structured educational context, these findings reveal the important role that principals play in reducing bureaucracy and decentralizing decision-making, despite their low authority in the system.

Our research concludes that in the bureaucratic and hierarchical structure of education in Iran, school principals can communicate and enact broad mission statements that filter down from the Ministry of Education to motivate teachers to learn together. Principals can also create school conditions that support teachers' collaboration in learning activities, such as collegial observation in teacher groups, and lesson plans aiming to improve their knowledge and practices. In this setting, ensuring safety and creating trust within teacher groups is very important. To support this, education authorities should invest in creating learning communities that design and implement professional development and assess their impact on teacher practice. Also, principals' leadership in the Iranian context should aim to articulate the learning vision through personal modeling, communication with teachers, providing the necessary supports for organizational learning, and managing the learning program.

4.3. Limitations

In the spirit of transparency, we wish to highlight several limitations regarding this study's sample, measures, and data analysis. First, this study focused exclusively on primary schools located in a single city in Iran. Different patterns of learning leadership might be found in primary schools located elsewhere in Iran because of the socio-economic and cultural factors surrounding the communities and schools. In this regard, some empirical evidence particularly from Iran implies that local school leadership practices can be influenced by conditions surrounding the school (Hallinger et al., 2017; Hosseingholizadeh, 2019). Thus, we suggest that this study be replicated on a national scale and include a larger number of participants in both public and private schools, to promote the generalizability of the findings.

Second, this study relied on solely one instrument for data collection: a questionnaire. Further studies could adopt qualitative and mixed-methods approaches and apply other instruments—such as observation and interviews with principals, teachers, and students—to gain a deeper understanding of the principal's contribution to creating a school context for collaborative learning, knowledge sharing, and trust-building.

Finally, while findings in the present research contribute substantially to the growing body of international knowledge regarding the relationship between school leadership and teacher workplace learning, it cannot imply any causal relationship since the data only captures one single point in time. Future research based on longitudinal designs, which could track changes in leadership and teacher behaviors over time, could better indicate any causality in the relationship between LCL and TPL (Hallinger et al., 2017).

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