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VALIDATION OF AN INSTRUMENT FOR MEASURING INTEGRATED PRINCIPAL LEADERSHIP PRACTICES

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ABSTRACT

Integration of leadership styles has become a more common practice among school principals in the contemporary era. However, the psychometric properties of a scale to measure integrated leadership model in the context of schools are scarce. The purpose of this study is to validate a school leadership instrument to aid researchers in measuring integrated principal leadership practices (IPLP) in the context of Maldives. Psychometric characteristics of the instrument was evaluated using a sample of 376 teachers working in schools of Maldives. The validity of the instrument was investigated using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), whereby discriminant validity, convergent validity, construct validity, and reliability were assessed. The results of EFA determined two factors: i) transformational leadership, and ii) instructional leadership. Additionally, CFA confirmed the hypothesised two-factor model. CFA results of the two-factor model showed good model fit indicating construct validity. The factor loadings and average variance extracted revealed the evidence of convergent validity. The internal consistency reliability of the instrument appeared to be excellent based on composite reliability and Cronbach's alpha values. The study findings confirmed the theoretical strength of an existing instrument for measuring integrated leadership practices of school leadership, combining both transformational and instructional leadership. The instrument can be used by researchers to measure integrated leadership practices of principals, while school leaders and policy makers can use the instrument to monitor hybrid leadership behaviour of principals.

Keywords: **Principal Leadership, Integrated Leadership, Instructional Leadership, Transformational Leadership**

INTRODUCTION

Leadership influence on educational outcomes has received a momentous attention during the past decades, which led to a plethora of studies on educational leadership and management. The extensive literature recognises principal leadership having a substantial influence for improvement of students and schools. Despite the considerable literature on principal leadership practices, leadership impact on student outcome has been focused on either instructional leadership or transformational leadership (Kwan, 2020). However, majority of the principals in schools are 'integrating principals', who have dual attention to both transformational and instructional leadership practices along with shared leadership practices (Urick & Bowers, 2014). Thus, school principals exhibit both the leadership behaviours to a certain extent (Dutta & Sahney, 2016).

For principals, instructional and transformational leadership are the most dominated leadership models in a school setting (Hallinger, 2003). Thus, integrated leadership encompasses transformational leadership and instructional leadership shared with teachers (Hallinger, 2003; Marks & Printy, 2003). The conceptual integrations of different schools of thought in educational leadership are apparent in the third generation of educational leadership (2000 – 2009) and continues in the fourth generation; after 2010 (Hallinger & Kovačević, 2019). The integrated leadership refers to the coexistence of transformational and shared instructional leadership at high level, where transformational leadership is coupled with instructional leadership in schools (Marks & Printy, 2003). Although leadership can be shared and distributed among others, the leadership practices are expected of principals' initiation (Hitt & Tucker, 2016). Principals need to use blended leadership for the overall improvement of schools. The integrated leadership is supported with empirical evidence that the level of principals' instructional leadership on student outcomes vary with the level of transformational leadership in schools (Kwan, 2020). Furthermore, contemporary leadership theories accommodate the adoption of instructional and transformational leadership skills in educational institutions (Atalay et al., 2019).

Principals enacting a strong instructional leadership approach can provide adequate leadership support to improve low performing schools, while strong transformational leadership is essential in supporting teacher commitment (Hallinger, 2003). Integrated leadership reflects both transformational leadership and instructional leadership actions of principals apart from instructional leadership of teachers (Marks & Printy, 2003). The importance of integrated leadership pave the way for researches to use instructional leadership and transformational leadership in educational leadership studies (Dutta & Sahney, 2016). As schools have their focus on learning, the link between instructional and transformational leadership is possible (Bush, 2014). Hence, the conceptualisation of a new model of leadership is needed in educational research that goes beyond the current instructional and transformational leadership (Shatzer et al., 2014). However, a scale to measure combined leadership practices of both instructional and transformational leadership of school principals was limited in the past literature.

To address the importance of having an integrated leadership model, Hitt and Tucker (2016) suggested a unified framework for effective leadership practice of school leadership as a result of a systemic review of leadership practices. However, their framework does not provide an instrument to empirically measure leadership practices of principals based on the unified model. Additionally, the integrated hierarchical leadership which was recently conceptualised and validated was based on Bass's transformational and transactional leadership (Thien et al., 2019) which does not cover instructional leadership. Furthermore, a questionnaire developed by Afework (2015) lacks psychometric properties such as reliability and validity.

The school leadership survey of Leithwood (2017) is one of the limited instruments capturing the conception of integrated leadership. The number of items in this instrument is simply the result of refinement of transformational leadership instrument (Leithwood & Jantzi, 1999) that has been made over repeated uses. Although, internal consistency of each scale has been tested on each occasion, continuous refinement of the instrument needs to be examined for psychometric properties of the constructs. Furthermore, validation of hybrid leadership models is extremely scarce, especially in Maldives. In the meantime, the present research attempts to

close this gap by validating an existing instrument that measures integrated instructional and transformational conception of leadership. Deconstructing concepts of leadership seems to be important to understand the fundamental aspects of integrated principal leadership practices (Aas & Brandmo, 2016).

Based on the status quo, educational leadership research these days requires conceptualisation of a new model of leadership that goes beyond the segregated model or theories of instructional leadership and transformational leadership (Shatzer et al., 2014). Hence, the purpose of the present study is to validate an existing school leadership framework that represents integrated leadership practices of principals (IPLP) in the Maldivian context. This study was guided by the following research questions:

1. What are the dimensions of the integrated principal leadership practices (IPLP)?
2. What is the validity and reliability for the IPLP sub-scales using the data from teachers working in the Maldivian schools?

LITERATURE REVIEW

Transformational leadership and instructional leadership are the two models of 'principal leadership' that are dominant in theoretical discussions (Printy et al., 2009). Studies on instructional leadership dominated in the field from 1980 to 1995, whereas transformational leadership started to outperform during the early 1990s (Gumus et al., 2018). The review of literature commences by introducing the theoretical framework of the study followed by previous research related to the two leadership models: transformational leadership and instructional leadership.

Theoretical Foundation

The practice of transformational and instructional leadership can be understood through the integration of leadership models and contingency leadership models (Hallinger, 2003). A theoretical base of integrated leadership was proposed by Marks and Printy (2003) and informed by Hallinger (2003) during the third generation of educational leadership and management. The proposed integrated view of leadership combines transformational leadership and shared instructional leadership (Hallinger, 2003; Marks & Printy, 2003). Shared instructional leadership specifies that principal should act as more of a facilitator of continual teacher growth than an inspector of teacher practice (Hitt & Tucker, 2016). Marks and Printy (2003) used theory of action to link the two leaderships, which holds the fact that efficacious principals act as transformational and instructional leaders simultaneously. According to them, transformational principals seek to increase teachers' commitment and organisational capacity for school improvement, while instructional principals seek out to achieve instructional goals of the school. Although, integrated leadership makes clear synergies and interdependencies by principals and teachers (Printy et al., 2009), principals need to practice and model both leadership models. Basically, integrated leadership has its theoretical foundation on transformational leadership and instructional leadership theories or models.

Transformational Leadership

The concept of transformational leadership was proposed by Burns (1978) from his seminal work on political leadership and subsequently extended by Bass (1985) with a thoughtful attention to followers in the field of business. The conceptualisation of transformational leadership has evolved with refinements for better conceptualisation and measurement (Bass & Riggio, 2005). The more refined work of Bass (1985) and his colleagues brings about four different elements or practices of transformational leadership theory. The four dimensions are; idealized influence, inspirational motivation, intellectual stimulation, and individual consideration (Avolio et al., 1991). The four core components do more with followers as: a) idealized influence in terms of attributed charisma and behaviour of the leader makes others to follow, b) leadership inspires followers in

inspirational motivation, c) intellectually stimulating can expand use of own abilities by followers, and d) intellectually considerate can provide necessary support to followers through mentoring and coaching (Bass & Riggio, 2005). These four dimensions are manifested in the two-factors theory of transformational leadership proposed by Avolio and Bass (1988) which comprises of transformational and transactional leadership.

Not long after the Bass's theory of transformational leadership, school leadership researchers embraced the theory in the field of education. Leithwood and Jantzi (1990) hunched the conception of school leadership as 'transformational', that transformational leadership strategies foster development of collaborative cultures in schools. The work of Leithwood and associates played an important role in legitimising the transformational leadership theory in school context as a strategy for school reform (Leithwood, 1992; Leithwood & Jantzi, 1990, 1999, 2000, 2005; Leithwood & Steinbach, 1991). The early studies found that transformational leaders pursue to achieve the following goals: developing and maintaining collaborative culture; fostering teacher development; and improving group problem solving (Leithwood, 1992). Leithwood (1994) and his colleagues provided the most fully developed model of transformational leadership and conceptualised with six factors: develops a widely shared vision for the school, builds consensus about school goals and priorities, holds high-performance expectations, models good professional practice, provides intellectual stimulation, and provides individualized support. With additional refinements, Leithwood and Jantzi (2006) organised these dimensions into three broad categories of leadership practices: setting directions, developing people, and redesigning the organisation. Recent refinements expanded the Leithwood's leadership model by adding 'improving the instructional program' (Boberg & Bourgeois, 2016) as the previous modifications did not capture direct instructional leadership behaviours of the principals. The inclusion of focusing on the improvement of curriculum and instruction is a more recent extension of transformational school leadership (Leithwood & Sun, 2012). Hence, after several revisions of Leithwood's model during the past decades, the current model of transformational school leadership consists of four categories of core leadership practices: setting directions, developing people, redesigning the organisation, and improving the instructional program (Leithwood & Sun, 2012).

Above mentioned two conceptual models of transformational leadership are more predominantly used in educational research (Urick & Bowers, 2014). Transformational leadership focuses on developing the capacity of the organisation (Hallinger, 2003). Additionally, the transformational leadership theory makes it explicit how transformational leaders exert their leadership influence on followers (Bush, 2014). Transformational leaders communicate high expectations, and inspire followers to achieve the organisational goals (Northouse, 2019). Furthermore, principals as leaders practice transformational leadership style to develop professional learning communities by encouraging their teachers (King, 2011).

Instructional Leadership

The empirical origin and emergence of instructional leadership theory can be traced from studies of effective schools undertaken in the late 1970s (Edmonds, 1979), but the notion of instructional leadership was ambiguous until 1980 (Gumus et al., 2018). The attention given to instructional leadership increased in 1980s and several instructional leadership models were introduced. Among the evolving models, conceptual frameworks developed by Hallinger and Murphy (1985), Murphy (1990), and Weber (1996) were concrete models of instructional leadership.

Instructional leadership framework of Hallinger and Murphy (1985) was the most cited instructional leadership model in the literature which covered three dimensions comprising 10 job functions. The three dimensions and respective job functions incorporated in the model are; a) defining the school mission (framing school goals, and communicating school goals), b) managing the instructional program (supervising and evaluating instruction, coordinating curriculum, and monitoring student progress), and c) promoting a positive school learning climate (promoting professional development, maintaining high visibility, providing incentives for teachers, developing and enforcing academic standards, and providing incentives for learning) (Hallinger & Murphy, 1985). The work of

Hallinger and Murphy (1985) resulted in Principal Instructional Management Rating Scale (PIMRS) to measure instructional leadership behaviour. The job functions in each domain presents what is required for school principals to enact instructional leadership. The principals as instructional leaders attempt to focus teachers' efforts on the goal of improving student learning (Hallinger, 1992).

Instructional leadership framework of Murphy (1990) incorporates four dimensions which consists of 16 sub-dimensions based on various literatures. The first dimension, *Developing mission and goals* requires principals to frame and communicate school goals; and the second one, *Promoting quality instruction and monitoring student progress* requires principals to promote quality instruction, supervise and evaluate instruction, allocate and protect instructional time, coordinate the curriculum, and monitor student progress. The third dimension, *Creating an academic learning climate* requires principals to establish positive expectations and standards, maintain high visibility, provide incentives for teachers and students, promote professional development; and the final one, *Developing supportive work environment* requires principals to create a safe and orderly learning environment, provide opportunities for meaningful student involvement, develop staff collaboration and cohesion, secure outside resources in support of school goals, and forge links between the home and the school. In contrast to Hallinger and Murphy's (1985) framework, the Murphy's (1990) framework of instructional leadership has not been empirically tested (Ng, 2018).

Perhaps, Weber (1996) identified five dimensions of instructional leadership: defining the school mission, managing curriculum and instructions, promoting a positive learning climate, observing and improving instruction, and assessing the instructional program. Regardless of evolving frameworks, instructional leadership theory placed its emphasis on leading teaching and learning, which is the core function of the schools. A close examination of these three models exhibit overlapping dimensions such as defining school mission, managing instructional programs, and promoting a learning climate in the school. Notably, instructional leadership is a key dimension of integrated leadership and predicted to be remained vastly relevant to practitioners and researchers with its position at the centre of the leadership models (Hallinger at al., 2020).

Comparing leadership models

Instructional leadership has more impact on student outcomes compared to transformational leadership counterpart (Shatzer et al., 2014). Comparing this impact, the effect of instructional leadership on student outcome was three to four times that of transformational leadership (Robinson et al., 2008). These results suggested principals to use instructional leadership over transformational leadership to influence student learning (Shatzer et al., 2014). Meanwhile, literature showed that transformational leadership behaviour was more frequent in principals than instructional leadership (Vanblaere & Devos, 2016).

Some studies used both transformational and instructional leadership as separate independent variables to compare the effect of them on various outcome variables (Karacabey et al., 2020; Lambrecht et al., 2020; Vanblaere & Devos, 2016). Lambrecht et al. (2020) found significant direct effects of instructional leadership on implementation of individual education planning while transformational leadership had no significant effect. They also found equal effect of both the leadership on structures for collaboration. Vanblaere and Devos (2016) found that both instructional and transformational leadership has direct relationship with participation in reflective dialogue, but instructional leadership matters for deprivatized practice and transformational leadership related to collective responsivity of professional learning community. Another study revealed that both instructional and transformational leadership were significantly and directly related to collective teacher efficacy, teacher trust and teacher professional learning (Karacabey et al., 2020). Additional findings revealed that instructional leadership has larger direct effect on collective teacher efficacy, while transformational leadership has larger direct effect on teacher trust compared with its counterpart, leadership style.

On the other hand, an 'either/or' approach was also used in studying instructional and transformational leadership effect on teachers commitment (Al-Mahdy et al., 2018; Cansoy et al., 2020; Hallinger et al., 2018; Ibrahim et al., 2014; Yu et al., 2002), teacher learning (Kim & Lee, 2019; Liu & Hallinger, 2018; Luyten & Bazo, 2019; Shengnan & Hallinger, 2020), teacher efficacy (Calik et al., 2012; Gkolia et al., 2018; Liu & Hallinger, 2018; Windlinger et al., 2020) and collective efficacy (Al-Mahdy et al., 2018; Calik et al., 2012; Cansoy et al., 2020; Hallinger et al., 2018; P. Liu, Li, & Wang, 2019; Windlinger et al., 2020). Although both instructional leadership and transformational leadership have been used separately in studies, each of them having significant effect on the same teacher outcome variables indicates the robustness of both the leadership styles in the school context. Each of these leadership styles has a different focus for the success of the school organisation. Thus, none of them can be left aside for school improvement effort and thus, the combination of the leadership models is required. Moreover, comparison of these leadership styles demonstrates substantial overlap among the observed practices of leaders (Urick & Bowers, 2014). In support of this, having no consensus of leadership styles on outcome variables such as student achievement made a shift from leadership styles to leadership practices in the literature. The integrated or hybrid model of leadership appeared to be productive to examine the impact of leadership practices.

Towards Integrated Leadership Model

The necessity for integrated school leadership emerged due to the fact that neither instructional leadership nor transformational leadership alone were enough to fulfil the need in promoting school improvement (Day et al., 2016). They stated that secondary school principals use combination of both instructional and transformational leadership to build structure and conditions necessary for school improvement. Leadership approaches need to be modified in line with both local culture and context, in terms of community culture and school context (Litz & Scott, 2017). Accumulation of research on instructional leadership during the past four decades also resulted in broader set of factors that affect student learning and school effectiveness, and in due course, led to the development of integrated models of school leadership (Hallinger et al., 2020).

In fact, Marks and Printy (2003) proposed integrated leadership because successful principals work on transformational and instructional tasks concurrently. Thus, leadership aspects must be integrated rather than creating a dispute between transformational and instructional leadership (Robinson & Gray, 2019). Based on the theoretical perspectives, the construct of integrated principal leadership practices used in this research model as shown in Figure 1, includes transformational leadership and instructional leadership. Both instructional and transformative leadership are necessary for facilitating interpersonal professional learning community (Vanblaere & Devos, 2016) and teacher professional learning (Karacabey et al., 2020). Thus, principals can enhance the resources and structures that support individual and collective learning by utilizing the power of combined leadership practices (Somprach et al., 2017).

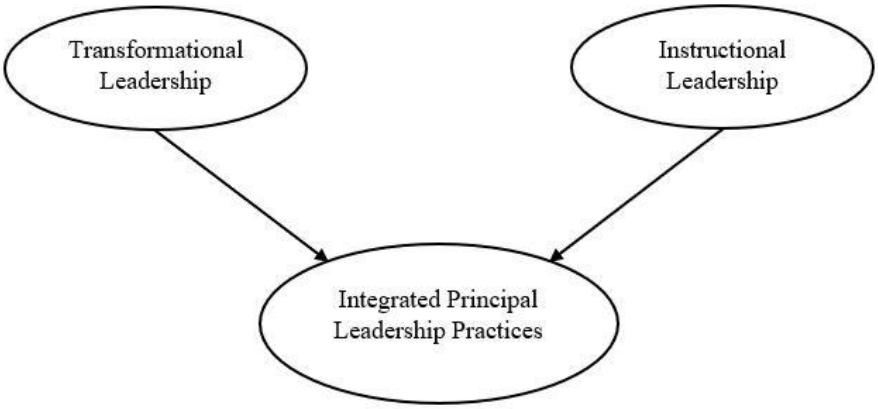

Figure 1. Research Model

METHODOLOGY

Data Collection and Sample

Using a survey method, the data for this study was collected from 376 teachers who were working in government (public) and private schools in Maldives. Teachers were used as participants rather than principals to minimise self-report response bias. The sample of this study was determined by the number of items (22 items) in the instrument. The cases used in each of the factor analysis (exploratory factor analysis and confirmatory factor analysis) are more than the minimum of 5 to 1 ratio (Gorsuch, 1983). The sample used in this study is sufficient to enable reliable estimations and model assessment when analysing confirmatory factor analysis using structural equation modelling (SEM) (Doğan & Özdamar, 2017; Kline, 2011). Approval for collecting data was obtained from relevant institutions, prior to data collection. An online survey form was used, except for the schools selected from Male' region, where a paper and pen questionnaires were used to collect data. Teachers' participation in the study was voluntary and anonymous. The completed survey forms were collected within two weeks after distribution from those schools where hard copies were provided. The online survey took approximately two months to complete.

With respect to the gender of the respondents, 156 (41.5%) were male and 220 (58.5%) were female. Among them, 123 (32.7%) respondents had less than 5 years of teaching experience, 134 (35.6%) respondents with 5-10 years of experience, 60 (16.0%) respondents with 11-15 years of experience, and 59 (15.7%) respondents with more than 15 years of teaching experience. Additionally, 37.5% of respondents taught at pre-school level and primary grades, while 62.5% of respondents taught at secondary or higher secondary level. With respect to teaching qualification, most of the teachers had above first degree, 30.9% of respondents with bachelor's degree, and 40.4% of the respondents with Master's degree. Furthermore, 28.8% of respondents had Certificate and Diploma level qualifications.

Instrumentation

The questionnaire used in this study was adapted from the 'Survey of An Integrated Model of School Leadership' (Leithwood, 2017), and the latest version; 'Educational Leadership Survey' (Leithwood, 2018). These two versions have similar items except two items, based on four dimensions of core leadership practices (Leithwood, 2012) and the 'Ontario Leadership Framework' (Leithwood, 2012). In order to validate the instrument, a total of 22 items were used in this study, including; a) 4 items of 'setting direction', b) 6 items of 'developing people', c) 4 items of 'redesigning the organisation', and d) 8 items of 'managing the instructional program'. The first three dimensions

reflect transformational leadership practices and managing the instructional program reflects instructional leadership. An example item from the dimension of 'developing people' was: *"Develops an atmosphere of caring and trust"*. A sample item from the dimension of 'managing the instructional programs' reads as *"Regularly observes classroom activities"*. Participants were asked to respond using a five-point Likert-type scale ranging from *Strongly Disagree* (1), to *Strongly Agree* (5). Reliability of the instrument was reported to be α = .98 in previous studies (Boberg, 2013; Boberg & Bourgeois, 2016). The reliability of the validated instrument in this study is reported in the results section.

Data Analysis

To conduct validation of the instrument, tests of factor analysis: (i) Exploratory Factor Analysis (EFA), and (ii) Confirmatory Factor Analysis (CFA) were performed to examine whether the two-factor model integrating transformational leadership and instructional leadership was able to fit the data from teacher response. A sample of 376 usable data were split into two data sets in order to use one in EFA and another in CFA, because it is not appropriate to use the same set of data in both EFA and CFA (Hair et al., 2010). The random split feature in Statistical Package for Social Science (SPSS) 21.0 was employed to select a random sample of 176 for EFA analysis. The remaining 200 sample was reserved for CFA analysis.

The main data analysis commenced from the second phase of three phases of scale development and validation identified by Boateng et al. (2018), which involves; sampling and survey administering, item reduction, and extraction of factors. These steps were part of the procedure for EFA. The 'item development' phase was excluded as this study involves validation of a scale that consists of previously developed and content validated items. The factors were extracted by performing EFA, using SPSS. For EFA, principal component analysis (PCA) with Varimax rotation was employed as the method of factor extraction and rotation respectively. These methods are appropriate for extraction and rotation in the exploratory factor analysis (Costello & Osborne, 2005).

Once the factors were extracted, CFA was performed using AMOS 21.0. The procedures for conducting CFA comprised of steps in scale evaluation. This phase of the instrument validation consists; tests of dimensionality, tests of reliability, and tests of validity; and convergent and discriminant validity. Several fit indices were used to assess the model compatibility with the data. These criteria include the following: Chi-square over degree of freedom ($\chi 2$ /df), goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Indexes (CFI), Tucker Lewis Index (TLI), and Root Mean Square Error Approximation (RMSEA). These measures are classified into three general categories: a) absolute measures, b) incremental measures, and c) parsimony fit measures (Hair et al., 2010).

The fit indices used for the assessment of the model fit and their cut-off values are as follows: CMIN/DF ≤ 5 (Wheaton et al., 1977) or CMIN/DF ≤ 3 (Byrne, 2016); CFI ≥ 0.9 (Byrne, 2016; Hair et al., 2010) and close to 0.95 (Hu & Bentler, 1999); TLI ≥ 0.90 (Hu & Bentler, 1999); GFI and AGFI > .80 (Doll et al., 1994); and RMSEA ≤ 0.08 (Hair et al., 2010; MacCallum et al., 1996).

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics for the original 22 items used to measure integrated principal leadership practices. The analysis involved responses from 376 participants after delegating the outliers, as seen in the table 1. There were no missing values as all the participants completed the survey. The mean scores from all the items are between 3.59 to 4.24, while the standard deviations fall between 0.83 to 1.14. Additionally, skewness ranged from – 1.42 to – 0.54, while kurtosis varied from – 0.42 to + 2.32. The values for skewness and kurtosis are within the acceptable range.

Table 1
Descriptive statistics for the questionnaire items

Item Code	n	Mean	SD	Skewness	Kurtosis
PL1	376	4.16	.84	-1.05	1.38
PL2	376	4.22	.84	-1.09	1.25
PL3	376	4.03	.95	-.82	.04
PL4	376	4.21	.83	-1.05	1.03
PL5	376	3.90	1.07	-.78	-.24
PL6	376	4.17	.92	-.96	.24
PL7	376	4.01	.93	-.80	.12
PL8	376	4.18	.93	-1.09	.90
PL9	376	4.13	.91	-1.03	.78
PL10	376	4.13	.95	-1.15	1.12
PL11	376	4.24	.89	-1.42	2.32
PL12	376	4.13	.94	-1.15	1.17
PL13	376	4.25	.91	-1.34	1.69
PL14	376	4.15	.90	-1.08	.98
PL15	376	4.07	.92	-.98	.83
PL16	376	4.09	.89	-.97	.96
PL17	376	3.72	1.12	-.73	-.15
PL18	376	3.59	1.14	-.54	-.42
PL19	376	3.88	1.07	-.90	.15
PL20	376	3.65	1.00	-.58	.00
PL21	376	3.92	.97	-.75	.19
PL22	376	3.92	.95	-.73	.16

Note: All the items have a minimum value of 1 and a maximum value of 5.

Exploratory Factor Analysis (EFA)

The first research question was focused on identifying dimensions of the integrated principal leadership practices (IPLP). To answer this question, exploratory factor analysis (EFA) was employed. The results of principal component (PCA) with varimax rotation for the first 22 items showed that two factors were extracted. The number of factors extracted were based on eigenvalues, in which factors with eigenvalues > 1 were retained (Kaiser, 1960). The Kaiser-Meyer-Olkin measure of sampling adequacy with 0.95 appeared to be sufficient. Bartlett's test of sphericity was significant (χ^2 (231) = 3645.112, $p < 0.000$). This proved that the correlation between items was large enough for conducting PCA in exploratory factor analysis. The scree plot generated from the analysis in Figure 2, showed a two-factor model which supported the theoretical basis of integrated leadership.

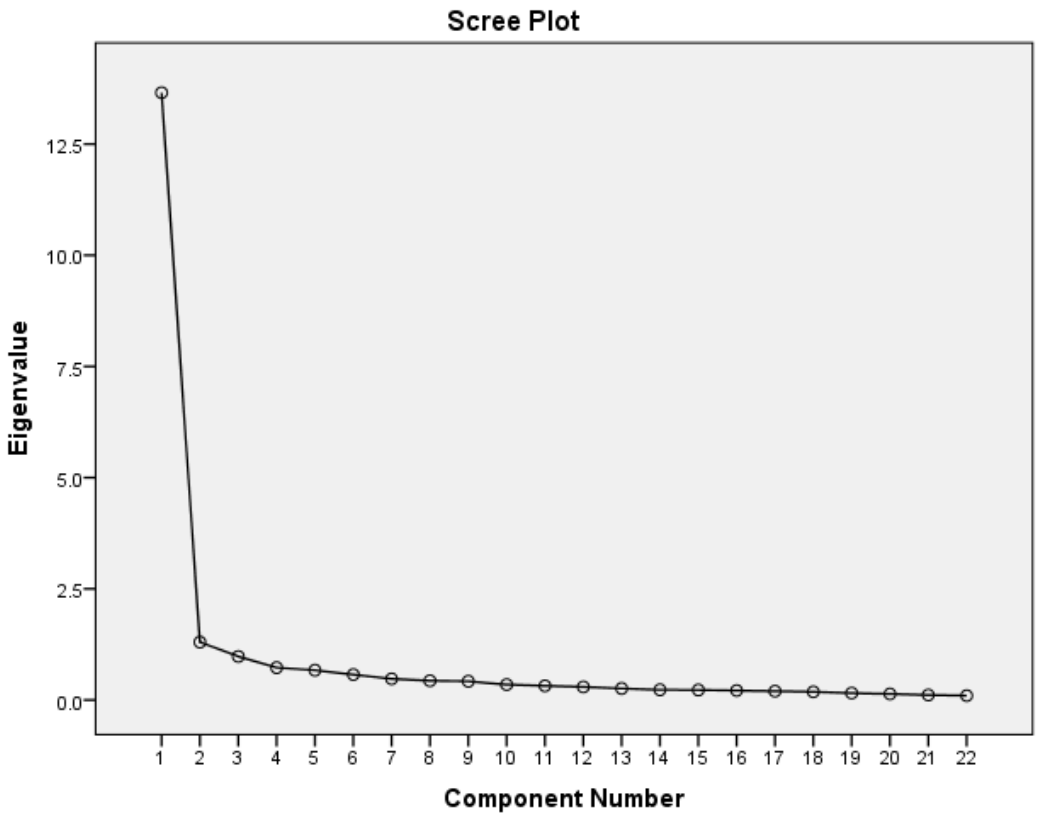

Figure 2. Scree Plot

The rotated factor matrix for the two factors: (i) transformational leadership, and (ii) instructional leadership are presented in Table 2. As seen in the table, each factor has adequate number of items having factor loading ≥ 0.50. Each factor has minimum 3 items. Specifically, factor 1 (transformational leadership) has 13 items and factor 2 (instructional leadership) has 9 items. A factor loading greater than 0.40 was used to identify the primary factors on which the items were loaded (Stevens, 1992).

Table 2
Rotated matrix for two factors

Code	Original Item	Component	
		Factor 1 (Transformational Leadership)	Factor 2 (Instructional Leadership)
PL1	Gives staff a sense of overall purpose.	.74	
PL2	Helps clarify the reason for your school's improvement initiatives.	.79	
PL4	Demonstrates high expectations for your work with students.	.68	
PL6	Encourages you to consider new ideas for your teaching.	.65	
PL7	Models a high level of professional practice.	.69	
PL8	Develops an atmosphere of caring and trust.	.75	
PL9	Promotes leadership development among teachers.	.70	
PL10	Provides professional development based on staff development needs.	.71	
PL11	Encourages collaborative work among staff.	.75	
PL12	Ensures teachers' participation in making decisions about school improvement.	.73	
PL13	Engages parents in the school's improvement efforts.	.75	
PL14	Is effective in building community support for the school's improvement efforts.	.75	
PL15	Provides resources to help staff improve their teaching.	.65	
PL3	Provides useful assistance to you in setting short-term goals for teaching and learning.		.64
PL5	Gives you individual support to help you improve teaching practices.		.62
PL16	Regularly observes classroom activities.		.56
PL17	After observing classroom activities, works with teachers to improve their teaching.		.81
PL18	Frequently discusses educational issues with you.		.83
PL19	Reduces/minimizes distractions in teaching for teachers		.72
PL20	Encourages you to use data in your work.		.77
PL21	Encourages data use in planning for individual student needs.		.72
PL22	Ensures creative use of appropriate technologies to maximize teaching and learning opportunities.		.78

The two factors could explain, in total, 67.99% of variance in integrated principal leadership practices. The item 'Regularly observes classroom activities' was loaded closely on both the factors as shown in the pattern matrix in Table 2. However, the loading was retained as the loading was higher in the factor 2 which is theoretically aligned with instructional leadership. Thus, none of the items were deleted from the original items.

Confirmatory Factor Analysis (CFA)

The second research question was anticipated to assess the validity and reliability for the IPLP sub-scales using the data from teachers working in the Maldivian schools. To answer this research question, confirmatory factor analysis (CFA) and internal consistency reliability were employed. Confirmatory Factor Analysis was performed using the second subset (n = 200) to confirm the two-factor model emerged from the Exploratory Factor Analysis (EFA). The results of first iteration showed that model fit indices were not achieved regardless of all the items having factor loadings above 0.60. Hence, modifications were brought to the model by deleting certain items (PL5, PL14, and PL16) based on low factor loadings and high cross-loadings. As only three items were deleted, the deletion was kept within the limit 20 per cent for confirmatory factor analysis (CFA). Additionally, error covariances were introduced between the items belonging to the same factor only. The final model from CFA results are shown in Figure 3.

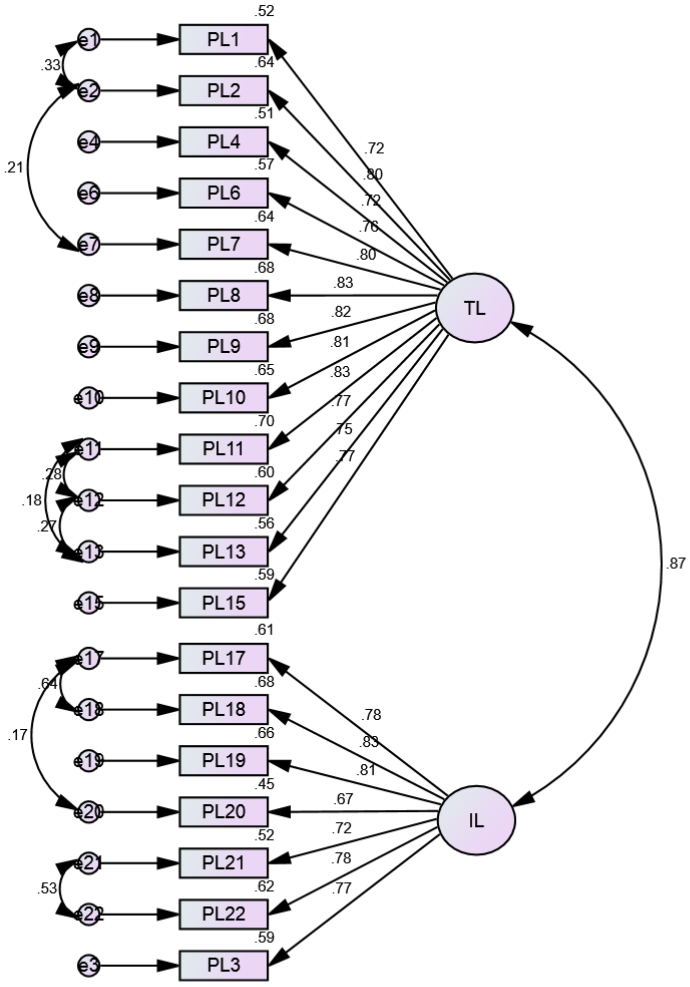

Figure 3. Final CFA Model

Weighted least square χ^2 (chi-square/df) was used to assess the degree of fit between the model and the data set used in CFA. Then, comparative fit index (CFI) was used, which is an incremental fit index, recommended to inspect as several other indices are dependent on sample size. Finally, the goodness-of-fit index (GFI) and the root mean square error of approximation (RMSEA) were used to evaluate the model fit. Furthermore, an adjusted goodness of fit index (AGFI) tries to count on differing degrees of model complexity (Hair et al., 2010).

Based on these fit indices and the cut-off values mentioned in the data analysis section, the results in the Table 3 for the two-factor model depict a reasonable fit to data: Chi-square χ^2 (143) = 322.604, $p < 0.001$, χ^2/df = 2.256; Comparative fit index (CFI) = .943; Goodness of fit index (GFI) = .866; Adjusted goodness of fit index (AGFI) = .822; Root mean square error of approximation (RMSEA) = 0.079. At least four fit indices were needed for construct validity of the measurement model (Hair et al., 2010). These values indicate an adequate fit between the model and the data that established construct validity of the instrument.

Table 3
Obtained indices for the CFA model

	χ^2	df	CMIN/DF	CFI	TLI	GFI	AGFI	RMSEA
Two-factor final model	322.604	142	2.256	0.943	0.932	0.866	0.822	0.079

The estimated factor inter-correlations, factor loadings, and error variances are displayed in the Figure 3. The factor loading of each item on the related subscale ranged from .673 to .834, as shown in the Table 4. Furthermore, all parameters were found to be significant which indicated that each item contributes significantly to the corresponding factor/subscale. Table 4 also shows the *t*-value (C.R.), factor loading estimate, and regression estimates of the items and their respective factors. The factor correlation between the two sub-constructs – transformational leadership and instructional leadership - did not exceed 0.90, indicating no issue with discriminant validity.

Table 4
Assessing validity and reliability of sub-constructs

Factor	Items	β	S.E	C.R.	*p*-value	AVE	CR	α
Transformational Leadership	PL1	.723	.068	13.687	***	.611	.950	.95
	PL2	.801						
	PL4	.716	.080	11.145	***			
	PL6	.756	.081	11.962	***			
	PL7	.798	.074	14.457	***			
	PL8	.826	.087	13.472	***			
	PL9	.825	.085	13.450	***			
	PL10	.806	.090	13.023	***			
	PL11	.834	.078	13.656	***			
	PL12	.772	.090	12.258	***			
	PL13	.749	.088	11.769	***			
	PL15	.765	.079	12.149	***			
Instructional Leadership	PL17	.782	.083	12.328	***	.589	0.909	.93
	PL18	.825	.081	13.310	***			
	PL19	.814						
	PL20	.673	.080	10.173	***			
	PL21	.718	.074	11.016	***			
	PL22	.785	.069	12.419	***			
	PL3	.766	.070	12.019	***			

The factor loadings of the items or indicators and average variance extracted (AVE) values in Table 4 indicated that the convergent validity was achieved. The AVE values above 0.50 indicates that each of the factors (transformational leadership and instructional leadership) or constructs explains more than half of the variance of its items (Hair, Hult, Ringle, & Sarstedt, 2017).

The internal consistency of the two factors of the final model was measured using composite reliability (CR) and Cronbach's alpha coefficients. The results of the reliability test are shown in Table 4. The internal consistency of both the factors (subscales) were above 0.7. This indicates that the items are measuring similar constructs.

DISCUSSION

The main purpose of this study was to validate a leadership instrument which is comprised of both transformational leadership and instructional leadership that can be used to measure integrated principal leadership practices. Additionally, the study aimed to theoretically confirm integrated leadership practices of school principals that represent both transformational and instructional leadership in the context of Maldives. The objective of the study was to identify the number of factors in integrated principal leadership practices, followed by assessing the validity and reliability of the instrument.

The findings of the study supported a two-factor model of integrated principal leadership practices. The empirical findings indicated that teachers' perception on school leadership practices of principals fit well into the theoretical dimensions of integrated leadership, in which principals practice both transformational leadership and instructional leadership for school improvement. Thus, existing school leadership framework of Leithwood (2012) offers theoretical dimensions of integrated leadership. Therefore, principal leadership practices as integrated leadership is a hybrid model with two factors or dimensions: a) transformational leadership, and b) instructional leadership. Psychometric properties (validity and reliability) were achieved for the two-factor model as for the sample of the Maldivian teachers in this study.

The exploratory factor analysis combined the items belong to first three dimensions of the original instrument into a single dimension referred as 'transformational leadership'. These three dimensions in the original instrument are: a) setting direction, b) developing people, and c) redesigning the organisation (Leithwood, 2015, 2017, 2018). Fundamentally, the three dimensions in the original instrument are manifestation of transformational model of school leadership (Leithwood & Jantzi, 2006). Additionally, the original dimension, 'improving the instructional programs' was determined as a separate factor in the EFA. This dimension was included as a recent extension to the original instrument during the refinement of items (Boberg & Bourgeois, 2016). Hence, this study further determined the instructional leadership items as distinct from transformational leadership, supporting the theoretical base of integrated leadership.

In comparison with original instrument and exploratory factor analysis in this study, all the items loaded similarly into respective broad categories, except two items. These two items characterise common practices of transformational and instructional leadership. The overlap indicates how 'instructional leadership' can be transformational (Al-Mahdy et al., 2018; Marks & Printy, 2003). The item, 'provides resources to help staff improve their teaching' was originally under improving the instructional programs. However, this item belongs to 'factor 1', which is transformational leadership and has theoretical as well as content support. Transformational leaders enhance work engagement of staff by providing accessible resources including physical, emotional, or psychological resources (Lai et al., 2020). For the next item, 'provides useful assistance to you in setting short-term goals for teaching and learning' originally belongs to setting direction. However, this item falls into 'factor 2', instructional leadership in this study. Developing a vision and goals is a central element of both transformational and instructional leadership. 'Framing the school goal' is one of the job functions of 'defining the school's mission' dimension of instructional leadership, which covers developing school-wide goals, goal related to teachers' job

responsibilities, and goal aligned with classroom objectives (Hallinger et al., 2013). Therefore, all the items belong to two-factor model of IPLP have content validity.

The dimensionality of the instrument to measure integrated principal leadership practices was examined by means of CFA to obtain the confirmation for the hypothesised two-factor model. The results of the CFA supported the dimensions in the literature and theoretical structures. The discriminant validity of the instrument is established as both the dimensions are unrelated. The confirmatory factor analysis indicated an acceptable fit between the two-factor model and the data, establishing construct validity. Additionally, convergent validity appeared to be good as well, because all the factor loadings are at an acceptable range and AVE value is higher than recommended values (Byrne, 2016). The composite reliability and Chronbach's alpha that are within the acceptable range show reliability of the instrument. Hence, the results of validation concerting the instrument are satisfactory in the Maldivian context as well. This tool based on broad leadership approach presents monitoring of instructional activities while developing people and redesigning the organisation to increase capacity of the organisation (Boberg & Bourgeois, 2016). Although, the instrument was developed in the western context, this instrument has the capacity to measure integrated principal leadership practices in the Maldivian context that embraces unique Asian culture.

This study builds on the notion that integrated leadership is a vital aspect of school leadership. Principals exercising transformational and instructional leadership practices, can function as more successful school leaders. Integrating two competing leadership approaches, provides better insights into effective leadership practices in schools (Boberg & Bourgeois, 2016). Thus, 'integrating principals' create positive academic climate and lower social disorder in schools (Urick & Bowers, 2014). Combination of transformational leadership and instructional leadership are required in school improvement phases (Day et al., 2016). Besides, the two leadership styles are well-suited and useful in strengthening leadership behaviour of principals as well (Boberg & Bourgeois, 2016). The transformational leadership is a necessary condition in schools, as it serve as a moderator for the effective performance of instructional leadership (Kwan, 2020). Similarly, principals having higher instructional leadership behaviour exhibit higher transformational leadership behaviour (Dutta & Sahney, 2016). Additionally, recent work of Hitt and Tucker (2016) and Robinson and Gray (2019) acknowledge integrated leadership with a unified and integrated framework of leadership practice. The findings of this study resemble the theoretical basis of integrated leadership explained in the past studies. The past studies showed that integrated leadership is composed of transformational and instructional leadership (Dutta & Sahney, 2016; Hallinger, 2003; Marks & Printy, 2003; Urick & Bowers, 2014). Hence, this study provides a validated tool to measure integrated leadership practices of principals.

Implications

Shifting from sole leadership models to integrated leadership models directs importance of having an instrument to measure integrated leadership practices. This study has succeeded in validating a tool to measure integrated leadership practices of school principals. As a result, the use of this instrument adds to the knowledge and understanding of integrated leadership among school leaders.

The study helps to extend the use of integrated leadership in school leadership. It also helps to prioritise leadership practices over leadership styles in leading schools. For example, some principals are giving total effort on instructional leadership believing that it is all needed for a school, while others prioritise transformational leadership style. Integrated leadership practices depict that these leadership styles are complementary rather than competing. The deconstructing of the concept in the existing tool provided a more comprehensive understanding on complexity in the school leadership.

The findings of this study provide and confirm the theoretical basis for further research to develop more comprehensive scales for measuring integrated principal leadership practices. This tool is inevitable for school principals to guide their leadership practices on hybrid model of leadership for the success of schools.

Limitations and directions for future research

The limitations of the existing instrument uncovered shared instructional leadership practices, which may lack leadership shared among teachers. However, the instrument composed of key instructional leadership practices necessary for school improvement. Despite the limitation, this instrument is good to measure both transformational and instructional leadership practices of school principals.

A research instrument can be developed in future using the theory of integrated leadership that explains transformational leadership and shared instruction leadership in which top-down and bottom-up leadership can be addressed. A cross-validation analysis can be performed to ensure the effectiveness of the proposed two-factor leadership model using different samples. This study re-emphasises future researchers to 'move beyond the use of single-paradigm models' of leadership (Day et al., 2016, p. 254), and employing validated integrated leadership scales.

CONCLUSION

The complex roles of school leadership require principals to use various leadership styles rather than a solo leadership style. The purpose of this study was to validate an instrument that could be used to measure integrated leadership practices of principals in the context of Maldives. The outcome of the instrument validation revealed that the measure of integrated principal leadership practices is composed of two dimensions; transformational leadership, and instructional leadership, which is in resemblance with past literature on integrated leadership. Hence, this instrument can be used to measure integrated leadership practices of principals in contexts beyond Western contexts.

REFERENCES

Aas, M., & Brandmo, C. (2016). Revisiting instructional and transformational leadership: The contemporary Norwegian context of school leadership. *Journal of Educational Administration, 54*(1), 92-110. https://doi.org/10.1108/JEA-08-2014-0105

Afework, T. H. (2015). School leadership: Integrated school leadership practices in secondary schools of Harari Regional State. *International Journal of Science and Research, 4*(1), 2319-7064.

Al-Mahdy, Y. F. H., Emam, M. M., & Hallinger, P. (2018). Assessing the contribution of principal instructional leadership and collective teacher efficacy to teacher commitment in Oman. *Teaching and Teacher Education, 69*, 191-201. https://doi.org/10.1016/j.tate.2017.10.007

Atalay, D., Akçil, U., & Özkul, A. E. (2019). Effects of transformational and instructional leadership on organizational silence and attractiveness and their importance for the sustainability of educational institutions. *Sustainability (Switzerland), 11*(20), 5618. https://doi.org/10.3390/su11205618

Avolio, B. J., & Bass, B. M. (1988). Transformational leadership, charisma and beyond. In J. G. Hunt, B. R. Baliga, H. P. Dachler, & C. A. Schriesheim (Eds.), *Emerging leadership vitas* (pp. 29-49). Lexington Books.

Avolio, B. J., Waldman, D. A., & Yammarino, F. J. (1991). Leading in the 1990s: The four I's of transformational leadership. *Journal of European Industrial Training, 15*(4), 9–16. https://doi.org/10.1108/03090599110143366

Bass, B. M. (1985). *Leadership and performance beyond expectations*. The Free Press.

Bass, B. M., & Riggio, R. E. (2005). *Transformational leadership* (2nd ed.). Lawrence Erlbaum Associates.

Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in public health, 6*, 149-149. https://doi.org/10.3389/fpubh.2018.00149

Boberg, J. E. (2013). *High school principal transformational leadership behaviors and teachers extra effort: the mediating role of teacher agency beliefs* [Doctoral Dissertation, University of Texas]. https://rc.library.uta.edu/uta-ir/bitstream/handle/10106/23958/Boberg_uta_2502D_12324.pdf?isAllowed=y&sequence=1

Boberg, J. E., & Bourgeois, S. J. (2016). The effects of integrated transformational leadership on achievement. *Journal of Educational Administration, 54*(3), 357-374. https://doi.org/10.1108/JEA-07-2014-0086

Burns, J. M. (1978). *Leadership*. Harper and Row.

Bush, T. (2014). Instructional and transformational leadership: alternative and complementary models? *Educational Management Administration & Leadership, 42*(4), 443-444. https://doi.org/10.1177/1741143214526830

Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd ed.). Routledge.

Calik, T., Sezgin, F., Kavgaci, H., & Kilinc, A. C. (2012). Examination of relationships between instructional leadership of school principals and self-efficacy of teachers and collective teacher efficacy. *Educational Sciences: Theory and Practice, 12*(4), 2498-2504.

Cansoy, R., Parlar, H., & Polatcan, M. (2020). Collective teacher efficacy as a mediator in the relationship between instructional leadership and teacher commitment. *International Journal of Leadership in Education*. https://doi.org/10.1080/13603124.2019.1708470

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research, and Evaluation, 10*(7), 1-9.

Day, C., Gu, Q., & Sammons, P. (2016). The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies to make a difference. *Educational Administration Quarterly, 52*(2), 221-258. https://doi.org/10.1177/0013161x15616863

Doğan, İ., & Özdamar, K. (2017). The effect of different data structures, sample sizes on model fit measures. *Communications in Statistics - Simulation and Computation, 46*(9), 7525-7533. https://doi.org/10.1080/03610918.2016.1241409

Doll, W. J., Xia, W., & Torkzadeh, G. (1994). A confirmatory factor analysis of the end-user computing satisfaction instrument. *Mis Quarterly, 18*(4), 453-461. https://doi.org/10.2307/249524

Dutta, V., & Sahney, S. (2016). School leadership and its impact on student achievement: The mediating role of school climate and teacher job satisfaction. *International Journal of Educational Management, 30*(6), 941-958. https://doi.org/10.1108/IJEM-12-2014-0170

Edmonds, R. (1979). Effective schools for the urban poor. *Educational Leadership, 37*(1), 15-24.

Gkolia, A., Koustelios, A., & Belias, D. (2018). Exploring the association between transformational leadership and teacher's self-efficacy in greek education system: A multilevel SEM model. *International Journal of Leadership in Education, 21*(2), 176-196. https://doi.org/10.1080/13603124.2015.1094143

Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Lawrence Erlbaum Associates.

Gumus, S., Bellibas, M. S., Esen, M., & Gumus, E. (2018). A systematic review of studies on leadership models in educational research from 1980 to 2014. *Educational Management Administration and Leadership, 46*(1), 25-48. https://doi.org/10.1177/1741143216659296

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Prentice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage Publications.

Hallinger, P. (1992). The evolving role of American principals: From managerial to instructional to transformational leaders. *Journal of Educational Administration, 30*(3), 35-48. https://doi.org/10.1108/09578239210014306

Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. *Cambridge Journal of Education, 33*(3), 329-352.

https://doi.org/10.1080/0305764032000122005

Hallinger, P., Gümüş, S., & Bellibaş, M. Ş. (2020). 'Are principals instructional leaders yet?' A science map of the knowledge base on instructional leadership, 1940–2018. *Scientometrics, 122*(3), 1629-1650. https://doi.org/10.1007/s11192-020-03360-5

Hallinger, P., Hosseingholizadeh, R., Hashemi, N., & Kouhsari, M. (2018). Do beliefs make a difference? Exploring how principal self-efficacy and instructional leadership impact teacher efficacy and commitment in Iran. *Educational Management Administration and Leadership, 46*(5), 800-819. https://doi.org/10.1177/1741143217700283

Hallinger, P., & Kovačević, J. (2019). Science mapping the knowledge base in educational leadership and management: A longitudinal bibliometric analysis, 1960 to 2018. *Educational Management Administration and Leadership*. https://doi.org/10.1177/1741143219859002

Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal, 86*(2), 217-247.

Hallinger, P., Wang, W. C., & Chen, C. W. (2013). Assessing the measurement properties of the principal instructional management rating scale: A meta-analysis of reliability studies. *Educational Administration Quarterly, 49*(2), 272-309. https://doi.org/10.1177/0013161X12468149

Hitt, D. H., & Tucker, P. D. (2016). Systematic review of key leader practices found to influence student achievement: A unified framework. *Review of Educational Research, 86*(2), 531-569. https://doi.org/10.3102/0034654315614911

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Ibrahim, M. S., Ghavifekr, S., Ling, S., Siraj, S., & Azeez, M. I. K. (2014). Can transformational leadership influence on teachers' commitment towards organization, teaching profession, and students learning? A quantitative analysis. *Asia Pacific Education Review, 15*(2), 177-190. https://doi.org/10.1007/s12564-013-9308-3

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and psychological measurement, 20*(1), 141-151. https://doi.org/10.1177/001316446002000116

Karacabey, M. F., Bellibaş, M. Ş., & Adams, D. (2020). Principal leadership and teacher professional learning in Turkish schools: examining the mediating effects of collective teacher efficacy and teacher trust. *Educational Studies*, 1-20. https://doi.org/10.1080/03055698.2020.1749835

Kim, T., & Lee, Y. (2019). Principal instructional leadership for teacher participation in professional development: evidence from Japan, Singapore, and South Korea. *Asia Pacific Education Review*. https://doi.org/10.1007/s12564-019-09616-x

King, F. (2011). The role of leadership in developing and sustaining teachers' professional learning. *Management in Education, 25*(4), 149-155. doi:10.1177/0892020611409791

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). Guilford Press.

Kwan, P. (2020). Is transformational leadership theory passé? Revisiting the integrative effect of instructional leadership and transformational leadership on student outcomes. *Educational Administration Quarterly, 56*(2), 321-349. https://doi.org/10.1177/0013161X19861137

Lai, F.-Y., Tang, H.-C., Lu, S.-C., Lee, Y.-C., & Lin, C.-C. (2020). Transformational leadership and job performance: The mediating role of work engagement. *SAGE Open, 10*(1), 1-11. https://doi.org/10.1177/2158244019899085

Lambrecht, J., Lenkeit, J., Hartmann, A., Ehlert, A., Knigge, M., & Spörer, N. (2020). The effect of school leadership on implementing inclusive education: How transformational and instructional leadership practices affect individualised education planning. *International Journal of Inclusive Education*, 1-14. https://doi.org/10.1080/13603116.2020.1752825

Leithwood, K. (1992). The move toward transformational leadership. *Educational Leadership, 49*(5), 8-12.

Leithwood, K. (1994). Leadership for school restructuring. *Educational Administration Quarterly, 30*(4), 498-518. https://doi.org/10.1177/0013161X94030004006

Leithwood, K. (2012). Core practices: The four essential components of the leader's repertoire. In K. Leithwood & K. S. Louis (Eds.), *Linking leadership to student learning*. Jossey-Bass.

Leithwood, K. (2015). *The transformational school leadership survey*. Leithwood and Associates Inc.

Leithwood, K. (2017). *Survey of an integrated model of school leadership*. Leithwood and Associates Inc.

Leithwood, K. (2018). *Educational leadership survey*. Leithwood and Associates Inc.

Leithwood, K., & Jantzi, D. (1990). Transformational leadership: How principals can help reform school cultures. *School Effectiveness and School Improvement, 1*(4), 249–280.

Leithwood, K., & Jantzi, D. (1999). Transformational school leadership effects: A replication. *School Effectiveness and School Improvement, 10*(4), 451-479. https://doi.org/10.1076/sesi.10.4.451.3495

Leithwood, K., & Jantzi, D. (2000). The effects of transformational leadership on organizational conditions and student engagement with school. *Journal of Educational Administration, 38*(2), 112-129. https://doi.org/10.1108/09578230010320064

Leithwood, K., & Jantzi, D. (2005). A Review of Transformational School Leadership Research 1996–2005. *Leadership and Policy in Schools, 4*(3), 177-199. https://doi.org/10.1080/15700760500244769

Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement, 17*(2), 201-227.

Leithwood, K., & Steinbach, R. (1991). Indicators of transformational leadership in the everyday problem solving of school administrators. *Journal of Personnel Evaluation in Education, 4*(3), 221-244. https://doi.org/10.1007/BF00125486

Leithwood, K., & Sun, J. (2012). The nature and effects of transformational school leadership: A Meta-analytic review of unpublished research. *Educational Administration Quarterly, 48*(3), 387-423. https://doi.org/10.1177/0013161X11436268

Litz, D., & Scott, S. (2017). Transformational leadership in the educational system of the United Arab Emirates. *Educational Management Administration & Leadership, 45*(4), 566-587. https://doi.org/10.1177/1741143216636112

Liu, P., Li, L., & Wang, J. (2019). Understanding the relationship between transformational leadership and collective teacher efficacy in Chinese primary schools. *International Journal of Leadership in Education*. https://doi.org/10.1080/13603124.2019.1623922

Liu, S., & Hallinger, P. (2018). Principal instructional leadership, teacher self-efficacy, and teacher professional learning in China: Testing a mediated-effects model. *Educational Administration Quarterly, 54*(4), 501-528. https://doi.org/10.1177/0013161x18769048

Luyten, H., & Bazo, M. (2019). Transformational leadership, professional learning communities, teacher learning and learner centred teaching practices; Evidence on their interrelations in Mozambican primary education. *Studies in Educational Evaluation, 60*, 14-31. https://doi.org/10.1016/j.stueduc.2018.11.002

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*(2), 130-149. https://doi.org/10.1037/1082-989X.1.2.130

Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. *Educational Administration Quarterly, 39*(3), 370-397. https://doi.org/10.1177/0013161X03253412

Murphy, J. (1990). Principal instructional leadership. *Advances in Educational Administration: Changing perspectives on the school, 1*, 163-200.

Ng, A. Y. M. (2018). Instructional leadership for effective learning. In D. Adams (Ed.), *Mastering Theories of Educational Leadership and Management* (pp. 69-87). University of Malaya Press.

Northouse, P. G. (2019). *Leadership: Theory and Practice* (8th ed.). SAGE Publications.

Printy, S. M., Marks, H. M., & Bowers, A. J. (2009). Integrated leadership: How principals and teachers share transformational and instructional influences. *Journal of School Leadership, 19*(5), 504-529.

Robinson, V., & Gray, E. (2019). What difference does school leadership make to student outcomes? *Journal of the Royal Society of New Zealand, 49*(2), 171-187. https://doi.org/10.1080/03036758.2019.1582075

Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis

of the differential effects of leadership types. *Educational Administration Quarterly, 44*(5), 635-674. https://doi.org/10.1177/0013161X08321509

Shatzer, R. H., Caldarella, P., Hallam, P. R., & Brown, B. L. (2014). Comparing the effects of instructional and transformational leadership on student achievement: Implications for practice. *Educational Management Administration & Leadership, 42*(4), 445-459. https://doi.org/10.1177/1741143213502192

Shengnan, L., & Hallinger, P. (2020). Unpacking the effects of culture on school leadership and teacher learning in China. *Educational Management Administration & Leadership,* 1-20. https://doi.org/10.1177/1741143219896042

Somprach, K., Tang, K. N., & Popoonsak, P. (2017). The relationship between school leadership and professional learning communities in Thai basic education schools. *Educational Research for Policy and Practice, 16*(2), 157-175. https://doi.org/10.1007/s10671-016-9206-7

Stevens, J. P. (1992). *Applied multivariate statistics for the social sciences.* Lawrence Erlbaum.

Thien, L. M., Rasoolimanesh, S. M., Ng, A. Y. M., & Ramayah, T. (2019). Conceptualizing and assessing an integrated hierarchical leadership construct in education context. *Journal of Applied Structural Equation Modeling, 3*(1), 15-30.

Urick, A., & Bowers, A. J. (2014). What are the different types of principals across the united states? A latent class analysis of principal perception of leadership. *Educational Administration Quarterly, 50*(1), 96-134. https://doi.org/10.1177/0013161X13489019

Vanblaere, B., & Devos, G. (2016). Relating school leadership to perceived professional learning community characteristics: A multilevel analysis. *Teaching and Teacher Education, 57*, 26-38. https://doi.org/10.1016/j.tate.2016.03.003

Weber, J. (1996). Leading the instructional program. In S. Smith & P. Piele (Eds.), *School leadership* (pp. 253-278). Clearinghouse of Educational Management.

Wheaton, B., Muthén, B., Alwin, D. F., & Summers, G. F. (1977). Assessing reliability and stability in panel models. *Sociological Methodology, 8*, 84–136.

Windlinger, R., Warwas, J., & Hostettler, U. (2020). Dual effects of transformational leadership on teacher efficacy in close and distant leadership situations. *School Leadership & Management, 40*(1), 64-87. https://doi.org/10.1080/13632434.2019.1585339

Yu, H., Leithwood, K., & Jantzi, D. (2002). The effects of transformational leadership on teachers' commitment to change in Hong Kong. *Journal of Educational Administration, 40*(4), 368-389. https://doi.org/10.1108/09578230210433436