

Linking principal task effectiveness to student achievement in secondary schools in the Maldives

Little is known about the relations between principals' effectiveness in specific leadership tasks and student achievement. The purpose of this study is to explore principal task effectiveness, as perceived by principals themselves and their senior management teams, and to explore the associations between perceived principal task effectiveness and student achievement. This study employed an exploratory quantitative design using surveys to collect principal and SMT ratings of principal task effectiveness. In addition, grades from secondary school exit examination in Mathematics and English as a Second Language were collected from all public secondary schools in the Maldives. An exploratory factor analysis was used to explore principal task dimensions. Hierarchical regressions were used to examine the predictive ability of principal task effectiveness and certain principal characteristics on student achievement. The analysis revealed five leadership task dimensions: School Management, Instructional Management, Teacher Quality, External Relations and Program Development and Evaluation. The Teacher Quality dimension positively predicted student achievement in English as a Second Language. This research highlights the importance of principal task effectiveness and its link to student achievement. The findings have implications for principals' preparation and professional learning.

Keywords: principal task effectiveness; leadership; student achievement

INTRODUCTION

Since the 1970s, educational research has argued that one of the common characteristics of effective schools is effective principal leadership (Andrews & Soder, 1987; Edmonds, 1979; Hallinger & Heck, 1998). As a result, empirical research and meta-analyses over the years have focused on examining the relation between principal leadership and student achievement, and revealed its positive effect on student achievement (Bossert, Dwyer, Rowan, & Lee, 1982; Hallinger & Heck, 1998; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Robinson, Lloyd, & Rowe, 2008). For example, Marzano and colleagues' (2005) meta-analysis confirmed a significant relation between school leadership and student achievement and Leithwood, Harris, and Hopkins (2008) noted that school leadership is second only to teacher quality in influencing student learning. Sirchia's (2017) literature review on school leadership described how effective principal leadership enhances the school environment, which in turn promotes students' academic achievement. Denoting the importance of instructional leadership practices, Robinson et al. (2008) noted that "abstract leadership theories provide poor guides to the specific leadership practices that have greater impacts on student" (p. 658), and highlighted that what is needed is more specific information about actual leadership practices. Thus, despite the broad research base, gaps in the research on principal leadership and its impact on student achievement remain.

Existing studies have explored different styles, dimensions, or general practices of school leadership, rather than examining principals' effectiveness in specific leadership tasks that might be associated with student achievement. The frequency of school leaders' task completion is insufficient to show the relation between principal task completion and student achievement. Instead, the effectiveness of principal tasks

completion plays a vital role in student achievement. However, there are few studies that have explored task effectiveness to date (Grissom & Loeb, 2011; Zheng, Li, Chen, & Loeb, 2017).

Furthermore, research on the impact of principal leadership on student achievement involved either measures of principal leadership (Hallinger, 2005; Leithwood & Jantzi, 2005; Marzano et al., 2005; Robinson et al., 2008; Witziers, Bosker, & Kruger, 2003) or management practices (Bloom, Lemos, Sadun, & Van Reenen, 2015; Di Liberto, Schivardi, & Sulis, 2015). However, the work of principals often involves both leadership and management. On a daily basis, a principal will be involved in distinct sets of school functions “spanning instruction, personnel, budgeting, student services, external relations, and a host of other areas” (Grissom, Loeb, & Mitani, 2015, p. 774). Leithwood, Jantzi, and Steinbach (1999) point out that, in practice, principals in their daily work may not be aware that they are either leading or managing; they simply carry out their tasks and complex responsibilities on behalf of the school and its students.

Most school leadership research has focused on Western education systems and the organizational structures within these systems (Hallinger & Leithwood, 1998; Oplatka, 2004). However, leadership is thought to be context specific with the leadership practices of principals stemming from their own sociocultural background and the school systems within each specific country (Oplatka, 2004). Having a sound understanding of the school setting is important as it is one of the factors influencing principal effectiveness. Contemporary school leadership research is incomplete if attention is not paid to the context as leadership is socially constructed and entrenched in it and thus inseparable from it (Osborn, Hunt, & Jauch, 2002). Cultural context is strongly associated with principals’ attitudes, values, and norms (Hallinger &

Leithwood, 1996) and there is a need for further empirical research that examines the significance of this context (Clarke & O'Donoghue, 2017). There has been very limited research into school leadership and leadership effectiveness conducted in the context of the Maldives, hence this study is situated in the context of the Maldives with a specific focus on school leadership and management tasks.

LITERATURE REVIEW

The current study investigates task effectiveness and its relation to student achievement and focuses on the instructional leadership as well as managerial leadership tasks of principals. The following sections review the research on instructional and managerial leadership alongside research on principal task effectiveness.

Instructional leadership

Broadly defined, instructional leadership is “anything and everything” principals might do to assist classroom learning (Hallinger & Murphy, 1985, p. 217). Researchers have sought to define specific elements or components of instructional leadership. For example, Robinson et al. (2008) have identified five dimensions of instructional leadership: establishing goals and expectations, resourcing strategically, ensuring quality teaching, leading teacher learning and development, and ensuring an orderly and safe environment. The effective practice of these dimensions requires leaders to be capable of the interrelated skills of applying relevant knowledge, complex problem solving, and building relational trust (Robinson, 2010).

Hallinger and Murphy (1985) identified three broad dimensions of instructional leadership: defining the school mission, managing the instructional program, and developing the school's learning climate. These are further delineated as 10 instructional leadership functions: frames the school goals, communicates the school's

goals, coordinates the curriculum, supervises and evaluates instruction; monitors student progress, protects instructional time, provides incentives for teachers, provides incentives for learning, promotes PD, and maintains high visibility.

Similarly, Grobler and Conley (2013) identified 10 elements of instructional leadership: designing school goals, communicating school goals, coordinating the curriculum, monitoring learner progress, protecting instructional time, maintaining high visibility, providing incentives for teachers, promoting PD, providing incentives for learning, and learner care. These 10 elements are organized into three main dimensions: curriculum, teacher PD, and students. The school principal as an instructional leader is positioned at the center of these three dimensions, coordinating the teaching and learning process.

The common aspect of instructional leadership models is that they focus strongly on student learning and the improvement of instruction, what is missing is the managerial aspect of school leadership. Additionally, the dimensions and elements strongly overlap and describe general leadership practices without being specific on the tasks a school leader would engage in within each dimension or element. This leaves the interpretation of each dimension and its linkage to leadership tasks vague.

Given its impact on student achievement (see Robinson et al., 2008), there has been an increased international interest in instructional leadership as a model for principal leadership. This has led educational researchers to study the effects of instructional leadership behavior on student achievement in different school contexts. For example, Dutta and Sahney (2016) conducted a cross-sectional survey in Indian higher secondary schools with a two-stage random sampling with 306 principal and 1,539 teachers. By applying path modelling, they confirmed a mediated-effect of principal leadership on student achievement. They proposed that the principals achieved

their goals through indirect means and that student achievement was positively influenced by a supportive, social, affective, and amiable physical environment.

In Pakistan, Alam and Ahmed (2017) demonstrated that principal instructional leadership influences student achievement through heightened teacher commitment. Similarly, in Australia, Gurr, Drysdale, and Mulford (2007) identified three successful instructional leadership approaches: integrating the teaching and learning process, emphasizing strong social justice values, and working through and together with staff. These studies suggest that the instructional leadership of a school principal plays a crucial role in increasing student achievement at different levels of schooling as well as in different contexts.

In contrast, Gaziel (2007) used the Instructional Leadership Behavior (ILB) questionnaire with 256 teachers from a representative sample of secondary schools in Israel. From the nine subscales used, only two practices – framing goals, and communicating them to staff – showed significant effects on student achievement. This finding contradicted most of the previous research on the effect of principal instructional leadership behavior on student achievement (e.g., Dutta & Sahney, 2016; Robinson et al., 2008; Shatzer, Caldarella, Hallam, & Brown, 2014). Gaziel (2007) argued that this contradictory finding could be the result of the secondary school context in Israel where teachers are more independent and further removed from the principal's work than in other contexts. Similar to most of the reviewed studies, the research reported here focused on secondary schools. However, the above studies have examined these models and their link to outcomes by measuring the frequency of these broadly described leadership practices, what is missing is the focus on the effectiveness of principals in these practices or more specifically the tasks they engage in. Hence, the current study used the principals' task effectiveness instead of frequency of a particular

behavior of the school principal to examine the impact of principal leadership on student achievement.

Managerial leadership

Leadership and management are often distinguished by suggesting leadership is concerned with establishing goals and facilitating change while management is about maintaining organizational activities and facilitating the work of others in the organization to achieve goals (Connolly et al., 2019). Some argue that leading and managing schools are two different things which should be at both ends of a continuum (Bolman & Deal, 2017), while others view them as more integrated. Although managing often includes certain leadership skills, the overall focus of managing is seen as maintenance rather than change (Bush, 2007). Thus, these two concepts can be seen as overlapping or complementary and equally important to accomplish school goals with the practice of them depending on the context and time (Bush, 2007; Wang, 2016).

An investigation of the effects of managerial practices in schools on student outcomes asserts that managerial practices are positively related to student achievement (Di Liberto et al., 2015). A multi-national study which included both Western and Eastern countries revealed that a principal's higher management quality was strongly linked with improvement of educational achievement (Bloom et al., 2015). The managerial aspect of school leadership thus seems imperative to student achievement, and when looking for a comprehensive school leadership model cannot be ignored (Valentine & Prater, 2011).

Principal tasks and task effectiveness

It is crucial to understand the specific tasks performed or skills needed by school leaders to promote student achievement. However, there is lack of research on which tasks

principals engage in on a daily basis, how effective they are in these tasks, and their effect on student achievement (Horng et al., 2010). Grissom and Loeb (2011) argued that it is not the frequency of certain tasks that is important, but the effectiveness in accomplishing the task. Furthermore, they argued that the managerial aspect of principals' work needed to be included in studies on task effectiveness as most literature on principal effectiveness in relation to school improvement had been focused largely on the instructional leadership aspects of principals' complex work; important aspects such as internal relations, organizational management, administration, and external relations have often been overlooked (Grissom & Loeb, 2011). They explored principal task effectiveness in a sample of 314 principals in Miami-Dade County Public Schools (M-DCPS) in the US including instructional leadership and managerial tasks in their measurements. Exploratory factor analysis (EFA) revealed five task dimensions (instruction management; internal relations; organization management; administration; and external relations) that principals engaged in on a daily basis. Grissom and Loeb's (2011) study revealed that organizational management skills predicted student achievement. Thus, the authors argued that these skills complement the instructional leadership work of principals to increase student achievement.

In a cross-sectional study, Zheng et al. (2017) investigated principal task effectiveness and student achievement in China. They adopted Grissom and Loeb's (2011) measurement framework by contextualizing their survey for the Chinese context. Their study examined multiple school outcomes, including student outcomes (students' reading achievement and students' learning efficacy) and teacher outcomes (teachers' occupational stress, job burnout, and teachers' teaching efficacy), and their correlation with leadership effectiveness, from the perspectives of both principals and teachers. The study highlighted five task dimensions, similar to those delineated in Grissom and

Loeb's (2011) study. The most highly correlated aspect was instruction organization. Similar to these two studies, the current study explores principal task effectiveness and student achievement, but in the Maldivian context.

The Maldivian context

The Republic of the Maldives is a small island nation located in the Indian Ocean, south west of India and Sri Lanka. The Maldives are geographically dispersed and comprise 1,192 islands, of which 187 are inhabited and 115 have been developed as tourist resorts. The total land area of the Maldives is 300 km². The islands are naturally formed into 26 atolls, which are administratively divided into 20 atoll regions. Maldivian society is uniquely homogeneous, practicing the same language, Dhivehi; religion, Islam; and culture. Nonetheless, English is widely used in commerce and business.

According to the 2014 census, the Maldivian population was 344,023, with a gender ratio of 103 males to 100 females. The population structure of the Maldives is such that 68% of the population is in the working-age group, 27% are children (under 15 years) and 5% of the population is above 65 years of age. Out of this, 38% of the population lives in the capital city, Malé. About 95% of the islands have a resident population of less than 2,000 and only 0.9% of islands, or four islands, have a population of more than 5,000 residents.

With the dispersed nature of the population across the islands, the government of the Maldives is facing numerous challenges to provide quality education. A particular challenge is the provision of quality secondary education. One response of the Ministry of Education (MoE) is to attract quality principals to the island schools by providing special allowances to work in schools which are situated away from their usual place of residence.

This study

In summary, a number of studies have investigated the impact of principal leadership on student achievement (Hallinger, 2005; Leithwood & Jantzi, 2005; Marzano et al., 2005; Robinson et al., 2008; Witziers et al., 2003), but gaps in the research remain. Firstly, these studies have explored different styles, dimensions, or general practices of school leadership, rather than honing in on the nature of specific tasks. Secondly, studies have tended to focus on leadership rather than management practices even though it has been argued that both management and leadership impact student achievement. Thus, the overall aim of this study is to explore principal-perceived specific task effectiveness and student achievement from the perspective of principals and SMTs – triangulating the principal perceptions to check on self-rating bias. In particular, this study seeks to answer the following research questions:

1. What are the dimensions of principal leadership and management as perceived by principals and SMTs?
2. To what extent is principal perception of their task effectiveness predictive of student achievement?
3. To what extent are SMTs' perceptions of principal task effectiveness predictive of student achievement?

METHOD

This study used a quantitative exploratory design with a survey adapted from Grissom and Loeb (2011) as the main data-collection tool, combining principal self-assessments of their task effectiveness with an assessment by deputy principals and lead teachers. A second data source was student achievement data in English as a Second Language (ESL) and Mathematics.

Survey

The survey had two sections. The first consisted of items asking for the participants' demographic information, including: gender, age, experience, and educational qualification. The second section had a list of 42 task items for rating principals' effectiveness on a five-point Likert scale with the following descriptors: 1 = *ineffective*; 2 = *minimally effective*; 3 = *satisfactorily effective*; 4 = *highly effective*; and 5 = *outstandingly effective*. The stem of the principal survey was "How effective are you in completing..." For the SMTs, the stem was changed to "How effective is your principal completing..."

The internal reliability of both the principal and SMT surveys in the current study was .97 and .98 respectively, showing a high reliability. Additionally, the factors also had a high reliability coefficient. The principal survey distinguished five factors: School Management ($\alpha = .91$), Instructional Management ($\alpha = .87$), External Relations ($\alpha = .86$), Teacher Quality ($\alpha = .85$), and Program Development and Evaluation ($\alpha = .77$). The SMT survey identified three factors: School Management ($\alpha = .96$), Instructional Management ($\alpha = .96$), and External Relations ($\alpha = .93$).

Survey adaptation

Although this tool has been shown to be valid by Grissom and Loeb (2011) in the initial context in the M-DCPS in the US, the current study took place in the Maldives, a different cultural context. The adaptation of the survey instrument involved three stages: contextualization, consultation, and cognitive interviews.

Item contextualization

In the first stage, the tasks used in Grissom and Loeb (2011) were contextualized by examining the survey items in relation to job descriptions of principals in the Maldives (MoE, 2017a). Items that were not applicable to principal work in the Maldivian context were removed from the original survey. These items were:

- directing supplementary, after-school or summer programs,
- implementing standardized tests,
- supervising students (e.g., lunch duty),
- utilizing district office communication to enhance goals.

Consultation with school principals and SMTs

In the second stage, four principals from different schools in the Maldives were consulted to check the relevance of the task items in the context of Maldivian schools and to suggest any new task item that they thought important and relevant. The consultation process is important to increase data reliability and hence internal validity of the study. The consultation led to the addition of six new task items:

- beginning teachers receive formal mentoring,
- teachers communicate well with parents,
- work experience placements for vocational educational programs are facilitated (e.g., Dhasvaaru),
- maintaining good relationships with government agencies,
- maintaining good relationships with non-governmental organizations.

Cognitive interview process

This study utilized the cognitive interview method to allow an in-depth analysis of individual items (Desimone & Le Floch, 2004) and thus to increase the internal validity of the survey. Cognitive interviews were held with six participants: two principals, two deputy principals, and two lead teachers. To increase the diversity of the responses, the researcher ensured that the participants were from the atolls and Malé schools.

Two series of cognitive interviews were conducted. In the first interview, the researcher identified the misinterpreted items and these items were further revised. A think-aloud process was used to establish participants' understanding of the items. Each

participant had an approximately 45-minute, one-to-one interview with the researcher wherein items were read out and they were encouraged to engage in a running commentary of what they thought that particular item was measuring, noting if an item was ambiguous, or difficult to understand. They were also asked to recommend any additional items which might be relevant in the Maldivian context and which they believed were not included in the survey. After the first interview, items were revised accordingly and the second interview was conducted to verify the understanding and clarity of the items. The misinterpreted items alongside the revised items are shown in Table 1.

Table 1

Misinterpreted and Revised Items

Initial item	Revision (after cognitive interview)
Developing coherent educational programs across the school	Developing consistent educational programs across the school
Releasing / counselling out teachers	Dealing with incompetent teachers
Maintaining campus facilities	Maintaining school facilities

Student achievement data

In addition to the survey data, this study utilized the exit examination achievement data for the current and previous year of the study to determine the relation between principal task effectiveness and student achievement. Achievement data for the previous year was utilized as prior school achievement and used in the regression model as a control variable. Data on student achievement in the International General Certificate of Secondary Education (IGCSE), Mathematics and ESL were obtained from the Maldivian MoE. The achievement data provided by the MoE included school name, student ID, gender and student grades. Except for Arabic medium schools, IGCSE is the common exit examination at all Maldivian secondary schools.

Achievement data for mathematics were available for 3,450 and 3,414 students for the previous and current year of the study, and for ESL achievement data were available for 3,844 and 3,841 students. IGCSE results are graded from AS (A star) to U (ungraded). Prior to the data analysis, these grade scores were converted to numerical values. The numerical values aligned the point system that the MoE uses in grading IGCSE results (MoE, 2017b). Students who were absent from the examination were removed from the data set. The grade points were coded and averages calculated for each school. The average scores of the students were used as a school achievement measure and this variable was taken as the dependent variable.

Data collection

Invitations to participate in the research were sent to all the public secondary schools. At least the principal and one SMT member, usually the deputy principal, were invited to complete the survey for triangulation purposes. The inclusion criteria for this study were that the school offered IGCSE, and had a principal who had joined the school at least one year before the study. Survey data were collected by the researcher visiting the schools in Malé using paper-based surveys. Due to schools outside of Malé being dispersed on a large number of islands, an electronic survey was used as an efficient and cost-effective means to collect data from the atoll schools.

Data were collected from all the schools that satisfied the inclusion criteria. However, only 35 (19%) of the schools offering lower secondary education had more than 500 students enrolled, which is the MoE criterion to have a deputy principal appointed in a school. All the schools that did not have a deputy principal had a lead teacher as it is assumed that both deputy and lead teacher would be able to rate principal effectiveness.

Research participants

Potential participants of this study included all the principals, deputy principals, and lead teachers working in the 189 public schools offering IGCSE in the Maldives. Of the 189 schools, 12 schools were excluded because the principal was on leave during the data collection period. A further 25 schools (14%) were excluded, because the principal had only joined the school in the last year. Reasons for excluding these schools were that such a short time in the role may not give SMTs enough time to observe and evaluate the principal's task effectiveness, or for their leadership to have an impact on achievement. The final sample included 152 schools, in which both, the principal (N = 152) and at least one SMT (N = 298) completed the survey. Table 2 provides an overview of school characteristics.

Table 2

Participating School Characteristics

Characteristic	<i>n</i>	%
School level		
1–10 school	114	75
1–12 school	38	25
School size		
Less than 100	16	10.50
101–500	110	72.40
501–900	14	9.20
901–1,300	5	3.30
1,301–2,100	7	4.60

Note. N = 152 schools. Totals of percentages are more than 100 for some characteristics because of rounding.

Data analysis

The Statistical Package for the Social Sciences, (SPSS) version 24 was used to analyze both survey and achievement data. Data analysis steps included: calculating descriptive statistics; EFA to identify task effectiveness dimensions; and hierarchical multiple

regression analysis. An EFA was used to identify the factor structure for both principal and SMT perceptions of principal task effectiveness.

Exploratory factor analysis

EFA was used to identify the factor structure for both principal and SMT perceptions of leadership effectiveness. The original study by Grissom and Loeb (2011) derived five factors from their data set. It was hypothesized that the results from this study might map onto a different factor structure given the cultural variations and accordingly different perspectives of principal work (Kim et al., 2016). Although this study adapts the 40 items task inventory from Grissom and Loeb's (2011) survey, the structure was extensively reviewed and revised to reflect the Maldivian context. Therefore, an EFA rather than a confirmatory factor analysis was considered more appropriate.

To explore a factor structure, it is vital to have an adequate sample size. An inadequate sample size can be unfavorable to a factor analysis process and it may produce inaccurate results (Osborne & Costello, 2004; Pett et al., 2003). Hence, for the initial factor exploration of a multivariate analysis it is often recommended to have at least 150 cases (Beavers et al., 2013). The current study collected data from all the eligible schools ($N = 152$). The results of the EFA are presented in the next section. The results of the EFA answered the first research question.

Hierarchical multiple regression analysis

A hierarchical multiple linear regression analysis technique was used to answer research questions two and three which aimed to examine the relation between the principal and SMTs' perceptions of principal task effectiveness and student achievement. A hierarchical regression model was performed to examine the dimensions identified by both principals and SMTs.

The assumptions of multiple regression – normality, linearity, independence, and homoscedasticity of residuals – were checked prior to conducting multiple regression. The graphs of \hat{z} pred vs \hat{z} resid were checked for the assumptions of normality, linearity, independence and homoscedasticity and the P-P plot was checked for normality. In all cases, the residual plots were nearly a rectangular shape showing that the assumptions of linearity, independence and homoscedasticity were met. The dots of P-P plots lie generally along the diagonal, which indicates a normal distribution. The plots derived from the data suggested that the residuals were normally distributed. In addition, multicollinearity was checked by using bivariate correlation among the independent variables and using variance inflation factor (VIF). For the current study, none of the independent variables in the principal model had a correlation coefficient above .8; the VIF was substantially greater than one, and the tolerance statistic was well above .1.

RESULTS

The EFA identified five leadership task effectiveness dimensions from the perspectives of the principal and three from the perspectives of the SMTs. A hierarchical multiple regression was applied to predict student achievement. The regression model of the task effectiveness dimensions identified by principals revealed that, of the five leadership task effectiveness dimensions, only the Teacher Quality dimension predicted student achievement in ESL. In addition, schools' prior achievement and principals' current-school experience predicted student achievement in ESL. However, the SMT model showed no significant results in predicting student achievement. These results are presented in further detail in the following sections.

Principal task effectiveness dimensions by principal rating

The EFA revealed five broad dimensions: School Management; Instructional Management; External Relations; Teacher Quality and Program Development; and Evaluation. In the initial analysis, Bartlett's Test of Sphericity was significant ($p < .001$) and Kaiser-Meyer-Olkin's (KMO) Test of Sampling Adequacy was .939. When the desired five-factor model was reached with no cross loadings, it was noticed that the item, *Developing relationships with students*, loaded into a conceptually incongruent factor. Hence, this item was removed from this factor.

An additional set of measures was used to determine the factorability and strength of the relation between the data and the extracted five-factor model. The EFA results suggested that the shared variance (i.e., communalities) ranged between .45 and .75 indicating an acceptable fit between the data and model. Although item communalities are considered high when their values are greater than .8, generally, correlations exceeding .3 provide enough evidence to indicate that there is sufficient commonality to justify comprising factors (Tabachnick & Fidell, 2007).

In the final five-factor model, Bartlett's Test of Sphericity was significant ($p < .001$) and Kaiser-Meyer-Olkin's (KMO) Test of Sampling Adequacy was .931. According to Beavers et al. (2013), a statistically significant test result for the Bartlett's test provides evidence of the existence of a linear combination of factors; that is the correlation matrix is non-singular (i.e., a factor matrix can be extracted) and the KMO's value shows that the items share a very high degree of common variance. Typically, KMO values between .50 and 1 are acceptable with higher values indicating greater common variance and lower values, indicating that additional items or factors should be removed before proceeding (Field, 2018). Thus, the KMO value of this factor analysis was deemed acceptable.

Table 3 shows the total variance explained by the five-factor model which overall was 62%. Beavers et al. (2013) indicate that 50% of the variance explained by the factors is adequate. Hence, the variance explained by the factors was satisfactory. The fifth factor consists of only three items; however, a minimum of three tasks is considered acceptable to form a factor. Any factor with less than three items is weak and unstable (Costello & Osborne, 2005).

Table 3. *Total Variance Explained by the Five-Factor Model*

Dimension	Total	Initial Eigenvalues	
		% of Variance	Cumulative %
School Management	12.947	43.156	43.156
Instructional Management	1.935	6.449	49.604
External Relations	1.594	5.314	54.919
Teacher Quality	1.276	4.253	59.172
Program Development and Evaluation	1.082	3.607	62.779

Principal task effectiveness dimensions by SMT rating

The EFA of SMT responses identified three broad task dimensions: School Management; Instructional Management; and External Relations. The extraction method applied was PAF with rotation direct oblimin with Kaiser Normalization, which yielded a four-factor model with some items cross loading. The same criteria as in the analysis of the principal survey were applied to derive a satisfactory model. The EFA results suggested that the shared variance (i.e., communalities) ranged between .538 and .801 indicating an acceptable fit between the data and the model. Further, Bartlett's Test of Sphericity was significant ($p < .001$) and Kaiser-Meyer-Olkin's (KMO) Test of Sampling Adequacy was .973. Table 4 shows the total variance explained by these three factors (69.69%), which is considered satisfactory in social science research. Hence, this is an adequate model to explore principal task effectiveness.

Table 4. *Total Variance Explained by the Three-factor Model*

Factor	Total	Initial Eigenvalues	
		% of Variance	Cumulative %
School Management	19.666	61.455	61.455
Instructional Management	1.546	4.832	66.287
External Relations	1.090	3.406	69.692

Predictability of student achievement

A hierarchical multiple regression was used to assess the ability of the five leadership task effectiveness dimensions (School Management, Instructional Management, External Relations, Teacher Quality, and Program Development and Evaluation) identified by principals to predict student achievement in ESL. After controlling for the influence of prior ESL achievement and principal experience in the current school, preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multi-collinearity and homoscedasticity. Prior achievement in ESL

and principal experience in the current school were entered as step 1, explaining 35.3% of the variance in student achievement in ESL. After entry of the five dimensions at step 2, the total variance explained by the model as a whole was 40%, $F(7, 137) = 13.05$, $p = .001$. The five leadership task effectiveness dimensions explained an additional 4.7% of variance in student ESL achievement, after controlling for prior ESL achievement and principal experience in the current school, $R^2 \text{ change} = .047$, $F \text{ change}(5, 137) = 2.14$, $p = 0.064$. In the final model, only two control measures were statistically significant, with Teacher Quality recording a higher beta value ($\beta = .29$, $p < 0.05$) than principal experience in the current school ($\beta = .22$, $p < 0.01$) as shown in Table 5. These beta values indicate that principal task effectiveness in the Teacher Quality task dimension was a moderate predictor of student achievement, whereas principals' school experience was a weak predictor of student achievement.

Table 5. *Hierarchical Regression Analysis Summary for Leadership Effectiveness Dimensions Predicting Student English Language Achievement (Principal Survey)*

Step and predictor variable	<i>B</i>	<i>SE B</i>	β	R^2	ΔR^2
Step 1:					
Prior English as a Second Language achievement	0.56	0.07	.54*	.353	
Principal experience in the current school	0.22	0.08	.15*		
Step 2:					
Prior English language achievement	0.55	0.07	.53*	.400	.047
Principal experience in the current school	0.25	0.08	.22*		
School Management	-0.53	0.3	-.22		
Instructional Management	-0.23	0.25	-.11		
External Relations	0.21	0.2	.1		
Teacher Quality Principal	0.63	0.24	.29*		
Program Development and Evaluation	-0.2	0.21	.09		

Note: * Significant β values.

A similar analysis was conducted for the Mathematics achievement data. Step 1 variables, prior school Mathematics achievement and principal experience in the current school, were able to explain 28.1% of the variance. The model was significant with $F(2, 141) = 22.59, p < .001$. Five leadership dimensions explained an additional .7% of variance in student Mathematics achievement, after controlling for prior school Mathematics achievement and principal experience in the current school, R^2 change = .007, F Change (5, 136) = .27, $p = .929$. In the final model, only prior school Mathematics achievement was statistically significant ($\beta = .51, p < 0.01$). Table 6 shows the summary of the Hierarchical Regression analysis.

Table 6. *Hierarchical Regression Analysis Summary for Leadership Effectiveness Dimensions Predicting Student Mathematics Achievement (Principal Survey)*

Step and predictor variable	<i>B</i>	<i>SE B</i>	β	R^2	ΔR^2
Step 1:					
Prior Mathematics achievement	0.48	0.07	.50*	0.281	
Principal experience in the current school	0.13	0.06	0.14		
Step 2:					
Principal experience in the current school	0.13	0.07	0.15	0.288	0.007
Prior Mathematics achievement	0.49	0.07	.51*		
School Management	0.02	0.25	0.01		
Instructional Management	0.1	0.21	0.06		
External Relations	-0.03	0.17	-0.02		
Teacher Quality Principal	0.09	0.2	0.05		
Program Development and Evaluation	-0.19	0.18	-0.11		

Note: * Significant β values

DISCUSSION

In the Maldivian context, from the five task dimensions, only the Teacher Quality dimension predicted student achievement in ESL examination. In contrast, Grissom and Loeb (2011) found that principals' self-ratings of organization management tasks rather than instructional management were positively associated with student achievement in both reading and mathematics. However, the current study supports the finding by the

later study by Zheng et al. (2017) in the Chinese context. They concluded that from both principals' and teachers' perspectives, the dimension of instruction management was most highly correlated with student outcomes (Zheng et al., 2017). The current study further aligns with a number of studies indicating that principals' instructional leadership behavior improves student achievement (see for example, Alam & Ahmad, 2017; Marzano et al., 2005; O'Donnell & White, 2005; Tan, 2018).

The current study shows that promoting teacher learning and development, and thus improving teacher quality can increase student achievement. Therefore, supporting the finding by Robinson et al. (2008) that promoting and participating in teacher learning and development had the highest effect size among the leadership dimensions identified in their meta-analysis. The Teacher Quality dimension identified by the principals in this study composed of instructional leadership tasks previously identified in the research (Barr & Saltmarsh, 2014; Bruns et al, 2018; Hitt & Tucker, 2016). It includes formal mentoring of beginning teachers, informal mentoring of teachers, counselling incompetent teachers, and communicating with parents.

Mentoring beginning teachers is important for teachers' adaptation process into the new school environment. Such mentoring is especially important for beginning teachers (Bruns et al., 2018) so that they can familiarize themselves with the school culture and norms. However, formal and informal mentoring can be important for more experienced teachers, e.g. when adopting a new pedagogy or program. Related to such mentoring is identifying and supporting ineffective teachers as teacher effectiveness has been shown to be one of the most important school factors that directly affect school achievement (Leithwood et al., 2008). Mentoring can support teacher effectiveness, hence the role of the principal in organizing and conducting mentoring programs for teachers can be central to a school's teaching quality. These findings align with Grissom

and Loeb's (2011) study that emphasize the significance of principals in nurturing instructional development of teachers. Similarly, Heck (1992) observed that high-achieving elementary schools had more regular classroom visits by their principals and Goldring, Porter, Murphy, Elliott, and Cravens (2009) found that effective leaders utilized the feedback from classroom observations to focus on teachers' professional development. In the same way, these results reflect those of Hitt and Tucker (2016) who indicate that an effective principal should safeguard the human resource function by either hiring proficient teachers, identifying and developing ineffective teachers, or removing incompetent ones who do not improve over time.

The Teaching Quality dimension further includes the principal's task of ensuring effective communication between parents and teachers. This reflects the findings of Barr and Saltmarsh (2014), Mistretta (2004), and Zhao and Akiba (2009) which highlight the importance of parental communication with schools for better student achievement. It is vital to note that teachers play a mediator role between the school and parents, and thus the effectiveness of teachers' conveying the relevant information to the parents can positively encourage parents' involvement with the school – which can, in turn, have a positive impact on student achievement. As a school leader, the principal plays a key role in enhancing communication between parents, teachers, and the school.

LIMITATIONS OF THE STUDY

A potential limitation of this study is its cross-sectional nature, which prevents it from being able to examine how student achievement may change with a change of principal or a change in leadership task effectiveness. A further limitation is that the socio-economic status of the schools was not taken into consideration. This information was not available at the school or student level as data on school composition and student

characteristics are not collected in the Maldives. It is only available on a regional level showing the differences between schools in the atolls and Malé.

CONCLUSION AND RECOMMENDATIONS

The current study investigated principals' perceived task effectiveness, the perceptions of SMTs (deputy principals and lead teachers) about their principal's task effectiveness, and the relations between perceived principal task effectiveness and student achievement in Mathematics and ESL IGCSE examination, in Maldivian schools. A key finding of this study is that principal perceived task effectiveness in the Teacher Quality dimension predicts student achievement in ESL. Hence, leadership engagement in tasks within this dimension seems to be an important area for improvement. For such improvement in effectiveness to occur in these tasks, an early focus on these in, for example, principal preparation programs could be beneficial. Furthermore, professional learning programs that are more task-oriented than theory-focused, or more focused on how theory would be applied within the actual task, could improve the effectiveness of principals already in the role. The findings of this study can be used to strengthen such programs by providing details on the specific tasks in which effectiveness is linked to improved student outcomes. Further, the tool used in this study can be used to assess principal's effectiveness in specific tasks to highlight areas to focus on in their professional development programs.

However, it also seems critical to include management competencies, as most of the novice principals may have worked as teachers prior to being principals and have acquired teaching experience, but they may lack the complex organizational management skills that are essential to leading and managing schools. This study has identified the specific tasks of a principal that relate to instruction, curricular

management and school practices. If applied aptly, these may result in increased student academic achievement.

REFERENCES

- Alam, A., & Ahmad, M. (2017). The impact of instructional leadership, professional communities and extra responsibilities for teachers on student achievement. *International Journal of Educational Management*, 31(3), 383-395. doi:10.1108/IJEM-09-2015-0126
- Andrews, R.L., & Soder, R. (1987). Principal leadership and student achievement. *Educational Leadership*, 44(6), 9-11.
- Barr, J., & Saltmarsh, S. (2014). "It all comes down to the leadership": The role of the school principal in fostering parent-school engagement. *Educational Management Administration & Leadership*, 42(4), 491-505. doi:10.1177/1741143213502189
- Beavers, A.S., Lounsbury, J.W., Richards, J.K., Huck, S.W., Skolits, G.J., & Esquivel, S.L. (2013). Practical considerations for using exploratory factor analysis in educational research. *Practical Assessment, Research & Evaluation*, 18, 1-13.
- Bloom, N., Lemos, R., Sadun, R., & Van Reenen, J. (2015). Does management matter in schools? *The Economic Journal*, 125(584), 647-674.
- Bolman, L.G., & Deal, T.E. (2017). *Reframing organizations: Artistry, choice, and leadership* (6th ed.). New Jersey: Jossey-Bass.
- Bossert, S.T., Dwyer, D.C., Rowan, B., & Lee, G.V. (1982). The instructional management role of the principal. *Educational Administration Quarterly*, 18(3), 34-64.
- Bruns, B., Costa, L., & Cunha, N. (2018). Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil? *Economics of Education Review*, 64, 214-250. doi:10.1016/j.econedurev.2018.03.003
- Bush, T. (2007). Educational leadership and management: Theory, policy and practice. *South African Journal of Education*, 27(3), 391-406.
- Clarke, S., & O'Donoghue, T. (2017). Educational leadership and context: A rendering of an inseparable relationship. *British Journal of Educational Studies*, 65(2), 167-182. doi:10.1080/00071005.2016.1199772
- Connolly, M., James, C., & Fertig, M. (2019). The difference between educational management and educational leadership and the importance of educational

- responsibility. *Educational Management Administration & Leadership*, 47(4), 504-519. doi:10.1177/1741143217745880
- Costello, A.B., & Osborne, J.W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- Desimone, L.M., & Le Floch, K.C. (2004). Are we asking the right questions? Using cognitive interviews to improve surveys in education research. *Educational Evaluation and Policy Analysis*, 26(1), 1-22.
- Di Liberto, A., Schivardi, F., & Sulis, G. (2015). Managerial practices and student performance. *Economic Policy*, 30(84), 683-728. doi:10.1093/epolic/eiv015
- 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. doi:10.1108/IJEM-12-2014-0170
- Edmonds, R. (1979). Effective schools for the urban poor. *Educational Leadership*, 37(1), 15-24.
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Los Angeles: Sage.
- Gaziel, H. (2007). Re-examining the relationship between principal's instructional/educational leadership and student achievement. *Journal of Social Sciences*, 15(1), 17-24. doi:10.1080/09718923.2007.11892557
- Goldring, E., Porter, A., Murphy, J., Elliott, S.N., & Cravens, X. (2009). Assessing learning-centered leadership: Connections to research, professional standards, and current practices. *Leadership and Policy in Schools*, 8(1), 1-36. doi:10.1080/15700760802014951
- Grissom, J.A., & Loeb, S. (2011). Triangulating principal effectiveness. *American Educational Research Journal*, 48(5), 1091-1123. doi:10.3102/0002831211402663
- Grissom, J.A., Loeb, S., & Mitani, H. (2015). Principal time management skills: Explaining patterns in principals' time use, job stress, and perceived effectiveness. *Journal of Educational Administration*, 53(6), 773-793. doi:10.1108/JEA-09-2014-0117

- Grobler, B., & Conley, L. (2013). The relationship between emotional competence and instructional leadership and their association with learner achievement. *Education as Change*, 17(sup1), S201-S223. doi:10.1080/16823206.2013.866003
- Gurr, D., Drysdale, L., & Mulford, B. (2007). Instructional leadership in three Australian schools. *International Studies in Educational Administration (Commonwealth Council for Educational Administration & Management (CCEAM))*, 35(3).
- Hallinger, P. (2005). Instructional leadership and the school principal: A passing fancy that refuses to fade away. *Leadership and Policy in Schools*, 4(3), 221-239. doi:10.1080/15700760500244793
- Hallinger, P., & Heck, R.H. (1996). Reassessing the principal's role in school effectiveness: A review of empirical research, 1980-1995. *Educational Administration Quarterly*, 32(1), 5-44. doi:10.1177/0013161X96032001002
- Hallinger, P., & Heck, R.H. (1998). Exploring the principal's contribution to school effectiveness: 1980-1995. *School Effectiveness and School Improvement*, 9(2), 157-191. doi:10.1080/0924345980090203
- Hallinger, P., & Leithwood, K. (1996). Culture and educational administration: A case of finding out what you don't know you don't know. *Journal of Educational Administration*, 34(5), 98-116.
- Hallinger, P., & Leithwood, K. (1998). Unseen forces: The impact of social culture on school leadership. *Peabody Journal of Education*, 73(2), 126-151.
- Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal*, 86(2), 217-247.
- Heck, R.H. (1992). Principals' instructional leadership and school performance: Implications for policy development. *Educational Evaluation and Policy Analysis*, 14(1), 21-34.
- 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. doi:10.3102/0034654315614911
- Hornig, E.L., Klasik, D., & Loeb, S. (2010). Principal's time use and school effectiveness. *American Journal of Education*, 116(4), 491-523. doi:10.1086/653625
- Kim, H., Ku, B., Kim, J.Y., Park, Y., & Park, Y. (2016). Confirmatory and exploratory factor analysis for validating the phlegm pattern questionnaire for healthy

- subjects. *Evidence-Based Complementary and Alternative Medicine*, 2016, 1-8.
doi:10.1155/2016/2696019
- Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership & Management*, 28(1), 27-42.
doi:10.1080/13632430701800060
- Leithwood, K., & Jantzi, D. (2005). A review of transformational school leadership research 1996–2005. *Leadership and Policy in Schools*, 4(3), 177-199.
doi:10.1080/15700760500244769
- Leithwood, K., Jantzi, D., & Steinbach, R. (1999). *Changing leadership for changing times*. London, UK: McGraw-Hill Education.
- Leithwood, K., Louis, K.S., Anderson, S., & Wahlstrom, K. (2004). Review of research: *How leadership influences student learning*. New York, NY: Wallace Foundation.
Retrieved from
<https://conservancy.umn.edu/bitstream/handle/11299/2035/CAREI?sequence=1>
- Marzano, R.J., Waters, T., & McNulty, B.A. (2005). *School leadership that works: From research to results*. Aurora, CO: ASCD.
- Ministry of Education. (2017a). *Maldives government gazette*. Retrieved from
<http://www.gazette.gov.mv/iulaan/view/66286>
- Ministry of Education. (2017b). *Secondary school academic performance grading system*. Maldives: Author.
- Mistretta, R.M. (2004). Parental issues and perspectives involving mathematics education in elementary and middle school settings. *Action in Teacher Education*, 26(2), 69-76. doi:10.1080/01626620.2004.10463325
- O'Donnell, R.J., & White, G.P. (2005). Within the accountability era: Principals' instructional leadership behaviors and student achievement. *NASSP Bulletin*, 89(645), 56-71. doi:10.1177/019263650508964505
- Oplatka, I. (2004). The principalship in developing countries: Context, characteristics and reality. *Comparative Education*, 40(3), 427-448.
doi:10.1080/0305006042000274872
- Osborn, R.N., Hunt, J.G., & Jauch, L.R. (2002). Toward a contextual theory of leadership. *The Leadership Quarterly*, 13(6), 797-837. doi:10.1016/S1048-9843(02)00154-6

- Osborne, J.W., & Costello, A.B. (2004). Sample size and subject to item ratio in principal components analysis. *Practical Assessment, Research & Evaluation*, 9(11), 8.
- Pett, M.A., Lackey, N.R., & Sullivan, J.J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Thousand Oaks, CA: Sage.
- Robinson, V.M. (2010). From instructional leadership to leadership capabilities: Empirical findings and methodological challenges. *Leadership and Policy in Schools*, 9(1), 1-26. doi:10.1080/15700760903026748
- Robinson, V.M., 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. doi: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. doi:10.1177/1741143213502192
- Sirchia, B.C. (2017). Effective leadership can positively impact school performance. *On the Horizon*, 25(2), 96-102. doi:10.1108/OTH-07-2016-0044
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics*. New York, NY: Allyn & Bacon/Pearson Education.
- Tan, C.Y. (2018). Examining school leadership effects on student achievement: The role of contextual challenges and constraints. *Cambridge Journal of Education*, 48(1), 21-45. doi:10.1080/0305764X.2016.1221885
- Valentine, J.W., & Prater, M. (2011). Instructional, transformational, and managerial leadership and student achievement: High school principals make a difference. *NASSP Bulletin*, 95(1), 5-30. doi:10.1177/0192636511404062
- Wang, V. (2016). *Educational leadership and organizational management: Linking theories to practice*. Charlotte, NC: Information Age Publishing.
- Witziers, B., Bosker, R. J., & Kruger, M.L. (2003). Educational leadership and student achievement: The elusive search for an association. *Educational Administration Quarterly*, 39(3), 398-425. doi:10.1177/0013161X03253411
- Zhao, H., & Akiba, M. (2009). School expectations for parental involvement and student mathematics achievement: A comparative study of middle schools in the

US and South Korea. *Compare: A Journal of Comparative and International Education*, 39(3), 411-428. doi:10.1080/03057920701603347

Zheng, Q., Li, L., Chen, H., & Loeb, S. (2017). What aspects of principal leadership are most highly correlated with school outcomes in china? *Educational Administration Quarterly*, 53(3), 409-447. doi:10.1177/0013161X17706152