

Re-Examining the Relationship Between Principal's Instructional/Educational Leadership and Student Achievement

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ABSTRACT This study was designed to re-examine the effect of the school principal's instructional/educational behavior on student achievement in secondary schools. Previous studies found the school principal to play a pivotal role in school effectiveness measured by students' achievement. However, there is a considerable vagueness concerning the specific principals behaviors that influence students' achievements. Therefore, research questions were formulated in order to look for the effect of different domains of the principal instructional leadership behaviors on students' achievement. The research sample included 256 teachers from 32 secondary schools in Israel, who filled out the Instructional Leadership Behavior (ILB) for their school principals. Data about school features, such as, school size, average class size, teacher education and experience were collected. These variables were regressed on school students' achievements in the matriculation exams. The results indicate that 49% of the variance in students' achievement is explained by the following variables: Students' SES, class size, and only one leadership behavior, framing goals and communicating to staff.

INTRODUCTION

In the last 20 years, much attention has been paid to educational leadership and its impact upon student achievements. However, researchers concur that the effects are indirect if not difficult to measure (Hallinger and Heck, 1998; Leithwood and Jantzi, 2000). One can find literature defending the position that principals matter. From certain research into school effectiveness (Brookover et al., 1979; Levine and Lezotte, 1990; Sammons et al., 1995) and an early review of school leadership studies (Leithwood and Montgomery, 1982), the effective principal comes to the fore as an instructional leader who affects school climate and student achievement.

On the other hand, there are authors that doubt whether instructional leadership effects exist and even they do, whether these are important.

Hallinger and Heck, (1996, p.1) conclude that "despite the traditional rhetoric concerning principal effects, the actual results of empirical studies in U.S and U.K are not altogether consistent in size and direction".

Another reason for the contradicting results in the field of instructional leadership is that the

concept of instructional/educational leadership has been conceptualized in many different ways. For example in the school effectiveness literature there is a distinction between instructional leadership and administrative leadership (Ribbins and Burridge, 1994), while Hallinger and Heck (1996b) argue that these concepts cannot be separated. In this sense, instructional/educational leadership is seen as developing strategies so that a variety of management instruments can be used to achieve a school's most important task-the desired student results. Given the divergence in these results the question of whether school principals matter remains unresolved. For that reason, the purpose of the present study is to attempt to look for the indirect effect of the principal instructional leadership behaviors on student achievement and of the contextual variables such as students' SES background and school size on student achievement.

Principal Instructional/Educational Behavior and Students' Achievement: Direct and Indirect Effects Models

One of the fundamental tenets of the research on school effectiveness and improvement concerns the apparently powerful impact of principals on processes related to school outcomes (Brookover et al., 1979; Rutter et al., 1979). Research findings from diverse countries

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draw similar conclusions. Schools that make a difference in students' learning are led by principals who make a significant contribution to the effectiveness of staff and in the learning of pupils in their charge (Edmonds, 1979; Murphy and Hallinger, 1992; Ribbins and Burrige, 1994). Principals' instructional leadership behaviors are viewed as a major predictor of school effectiveness (Murphy, 1988). Critics have questioned the empirical validity of those arguments (Van de Grift, 1990).

Hallinger and Heck (1998) examined the empirical literature on principal effects that emerged between 1980 and 1995. In the 40 studies they reviewed, they found different models used to investigate the relationship between school leadership and student achievement. First, the direct effect model, which suggests that leaders practices can have effects on school outcomes and that these can be measure apart from related variables. Second, the mediated effect, which assumes that leaders contribution and effect on school outcomes is mediated by other organizational and cultural factors. Finally, the reciprocal effect model, in which it assumed that relationships between the principals and features of the school and its environment are interactive. In most reviewed studies direct effect models were employed. However, according to Hallinger and Heck (1998), studies in which indirect effect models are used show a greater impact of school leadership on student performance than do studies employing direct effect models. Finally, they concluded that from 21 original studies; in nine studies no relationship was found, six studies showed mixed effect and only six studies showed a positive relationship.

The explanation for the paucity of positive results is explained by context differences in school settings, variation in the principal's role, alternative theoretical models, and methodological differences in how analyses were conducted and also several problems associated with previous research on the effects of principal instructional leadership behavior on school outcomes (Heck et al., 1990). The largest number of problems mentioned in the literature have been the following: (a) previous studies have already noted that principals' instructional leadership behaviors do not appear to directly affect the academic achievement of students (Larsen, 1987; Pitner, 1988; Leitner, 1994; Van de Grift and Houtveen, 1999), rather, the relationship has been

viewed indirectly through such activities as decision making, communicating to others, "gate keeping" with parents and other community interests, and monitoring the core technology and work activities at the school site. (b) In managing the work structure of the school, principals do not affect the academic achievement of individual students in the same manner that teachers do; that is, through direct classroom instruction. Principals may impact teaching and classroom practices, however, through school decisions made about, for example, formulating school goals, setting and communicating expectations, allocating necessary resources, supervising teachers' performance and through promoting a positive, orderly environment of learning (Hallinger and Leithwood, 1994). (c) While the effective schools research has established correlations between principal instructional leadership behaviors and school outcomes, most of the research methods have been either case study or ethnographic, and few studies were co-relational or allowed for the causal relationship (Hallinger and Murphy, 1987). (d) The ambiguous principal's role is as is instructional leadership. Instructional leadership has only rarely been defined in the research as specific policies, practices and behaviors initiated by the principal (Wimpelberg et al., 1989). This has made it unclear behaviors are to be considered important for an effective instructional leader. (e) Much of the previous research on principal instructional leadership has been concerned with the relationship of isolated personal traits of administrators (e.g., locus of control, leadership style) that correlate with successful schools, while generally ignoring the context of the school. These studies yielded problematic results because correlations between administrative traits and student achievement have been questioned as valid indicators of important domains of principal leadership.

Despite the problems mentioned, Andrews and Soder (1987), using a direct effect model some salient instructional leadership behaviors which appear to affect student achievement: (1) resource provider, (2) instructional resource, (3) communicator, and (4) visible presence in the school. Strong instructional leadership in these four domains was found to be associated with increased mathematics and reading gains, particularly among low-achieving students.

Hallinger et al. (1996), explored the extent of

the principal' effects on reading achievement in a sample of 87 U.S elementary schools. Their results indicated a direct effect of leadership on the existence of a clear school mission, which in turn influenced student opportunity to learn and teachers' expectations for student achievement. That is to say, principals influence student learning indirectly by developing a school mission that provides an instructional focus for teachers throughout the school, and this creates a school environment that facilitates student learning. Heck et al. (1990) found that principals in higher achieving schools spent more time than their counterparts in low producing schools in direct classroom supervision and in working with teachers to coordinate the school's instructional program. Brewer (1993) found higher academic gains in high schools were principals framed educational goals and held high academic goals.

Leithwood (1994) reinforced the importance of coordinating the school's goals with its curriculum and, by that, achieving school outcomes.

In this model, goals are viewed as instrumental agents used by instructional leaders to focus the attention of staff and students on a limited range of activity.

Because of the problems mentioned above, and because of the paucity of the studies reporting positive effects of principal instructional/educational leadership and student achievement, the following research questions were posed for this study:

1. How frequently do principals invest their time in the different instructional leadership domains?
2. What are the domains of principal instructional/leadership behavior which are significantly associated with student achievement?
3. What are the relationships between the contextual variables; students' socioeconomic background, school size and student achievement?
4. What are the mediated effects of the principals' instructional leadership behavior) ILB) subscales in predicting student achievement?

METHOD

Sample: For this study, thirty-two secondary schools were chosen randomly (simple random) from the four of the six educational districts in Israel (eight schools from each educational

district). The four educational districts account for 60% of the total student enrollment in the secondary public schools and are largely representative of the rest of secondary schools in Israel. The smaller schools enroll between 400 to 600 students and the bigger schools up to 600 students.

Process: Eight full-time teachers from each of thirty-two schools were asked to rate their principals' instructional leadership behavior (N= 256 teachers). The questionnaire was originally developed by Hallinger (1983). It focuses on those behaviors which are related to the central activities of schooling and which are thought to affect students' academic performance. Derived from the research on effective schools, the principals' instructional leadership role is viewed as incorporating several components, each of which is enacted through a variety of behaviors. In effective schools, principals engage in the following activities: framing the school goals, communicating these goals, supervising and evaluating instruction, coordinating the curriculum, monitoring student progress, protecting instructional time, maintaining administrator visibility, promoting professional development, and promoting academic standards and providing incentives for students.

The Instructional Leadership (management) Behavior (ILB) instrument incorporated 70 items within 11 subscales. It was slightly modified following face validity trials among 10 school principals, to account for the Israeli setting (1). The questionnaire used incorporated 36 items within 9 subscales. Respondents were assured of anonymity and asked to describe the extent to which their principals exhibited each of the behaviors on a Likert-type scale (1= very little; 4= very much). The 9 subscales are the following:

Frames the school's goals and communicates them to staff (i.e., uses data on student academic performance when developing the school's academic goals; refers to school academic goals in assemblies).

Supervises and evaluates instruction (i.e., ensures that the classroom objectives are consistent with school goals).

Coordinates the curriculum (i.e., draws upon the results of student testing when making curriculum decisions).

Monitors student performance (i.e., distributes the results of student testing to teachers in a timely fashion).

Provides incentives for teachers (i.e., reinforces exceptional efforts by teachers for the success of their students).

Maintains visibility (i.e., visit classes).

Promotes teachers' professional development (i.e., sets aside time at staff meetings for professional development).

Promotes academic standards (i.e., sets high standards for the percentage of students who should master skills objectives).

Provides incentives for students (i.e., praises students for good results).

The reliability of the instrument was assessed by determining its internal consistency through an estimate of inter-rater reliability; this assessment corrects for sets of ratings varying from one school to another. The test yielded reliability coefficients for the 9 subscales that ranged from .72 to .88.

Assessment of the instrument's validity was done by running a factor analysis (with varimax rotation) upon the data. Only four of the 9 subscales- frames the schools' goals, supervises and evaluates instruction, monitors student performance, maintains visibility - were judged to measure distinct job components.

The *dependent variable* – student achievement at each school level, by using scores on the Matriculation exams in English, mathematics, and Hebrew (which every student in the secondary school in Israel has to complete, in order to be able to continue his/her studies in higher education). These were collected from each of the participating schools for the school years 2002/2003 and 2003/2004.

To control for the possible effect contextual variables on achievement, data collected on: Students' socio-economic status (in Israel it is measured by an index called: Madad hatipuah, which is calculated according to the fathers' origin ; father's education and number of children in relation to lodging size. Usually schools are divided in the following categories "under-developed" having high percentage of students" called "Teunei-Tipuah" and "developed" with a low percentage of "Teunei Tipuah", all the data were obtained from the secondary schools unit at each relevant local education authority.

Data Analysis: Analysis of the data proceeded through three stages. The first stage was to describe the instructional behavior of the principals as perceived by the teachers who responded. Next, a presentation of the inter-

relationships between the independent variables (i.e., scores on the nine subscales of the Instructional Leadership Behavior subscales) and between them and the dependent variable- student achievement (when the unit of analysis is the school), and also the correlations between the contextual variables and achievement were calculated. Those ILB subscales deemed to be both reliable and valid, and the contextual (control) variables which were significantly related to achievement, were carried forward into the next stage of the analysis, forward multiple regression. The control variables were entered into the equation first, followed by the ILB subscales scores in every order.

FINDINGS

The first stage of the analysis described the instructional leadership behavior of the principals in the sample schools. Several patterns emerged as described in Table 1.

Table 1 presents the mean scores and standard deviations for the IBL subscales. Table 1 indicates that according to teachers' reports their principals spend considerable time in the following instructional areas: Maintaining visibility (M= 3.6; SD=1.0); monitoring student performance (M= 3.5; SD= 0.8); coordinating the curriculum (M= 3.2; SD= 0.7); framing goals and communicating them to teachers (M= 3.1; SD= 1.1)), and promoting academic standards (M= 3.0; SD= 0.6); while spending less time in providing incentives for teachers (M= 2.6; SD= 0.5); supervising and evaluating instruction (M= 2.5; SD= 0.4); promoting teachers' professional

Table 1: Means and (standard deviations) for instructional leader behavior of school principals as perceived by teachers (N=256)

	Means	Standard Deviations
Frames the school goals	3.10	1.1
Supervises and evaluates instruction	2.50	0.4
Coordinates the Curriculum	3.20	0.7
Monitors student performance	3.50	0.8
Maintains visibility	3.60	1.0
Provides incentives to teachers	2.60	0.5
Provides incentives to students	1.90	0.3
Promotes teachers professional development	2.20	0.8
Promotes academic standards	3.00	0.6

range 1-4, 1 = very little, 4 = very much

development ($M= 2.2$; $SD= 0.8$) and providing incentives for students ($M= 1.9$; $SD= 0.3$).

The second stage of the analysis sought correlations between the variables: Independent variables on the 9 subscales of the ILB, the control variables (teachers' job experience, School size and students SES), and the dependent variable of student achievement. Table 2 displays the Pearson product moment correlations for all the variables.

Table 2 reveals that all the variables (independent, controlled and dependent) are positively correlated with each other. However, the following are significant: "Frames the school goals" and "communicates to staff" is significantly correlated with: "promotes academic standards" ($r=.32$; $p<.05$), with students' SES ($r=.37$; $p<.05$) and with achievement ($r=.39$; $p<.05$). "Supervises and evaluates instruction" is significantly correlated with monitoring students performance ($r=.33$; $p<.05$), with students' SES ($r=.34$; $p<.05$) and with student achievement ($r=.38$; $p<.05$). "Monitoring student performance" is significantly correlated with teacher job experience ($r=.37$; $p<.05$) with students' SES ($r=.35$; $p<.05$), and with student achievement ($r=.32$; $p<.05$). "Maintaining visibility" is significantly correlated with "promotes academic standards" ($r=.34$; $p<.05$) and with student achievement ($r=.35$; $p<.05$).

"Provides incentives to teachers" is

significantly correlated with job experience ($r=.45$; $p<.01$) and with student achievement ($r=.38$; $p<.05$).

Provides incentives to students is significantly correlated with student SES ($r=.40$; $p<.01$). "Promotes academic standards" is significantly correlated with student achievement ($r=.37$; $p<.05$).

Teacher job experience is significantly correlated with school size ($r=.32$; $p<.05$), and with student achievement ($r=.33$; $p<.05$).

School size is significantly correlated with student achievement ($r=.36$; $p<.05$), and finally student SES is significantly correlated with student achievement ($r=.60$; $p<.001$).

The third stage of data analysis involved forward multiple regressions. Because of the significant correlation between the control variables (student SES school size, teacher job experience) and student achievement, these three variables were carried forward into the regression. In line with the coefficients of the validity that were calculated for the ILB survey, the subscales "framing goals" and "communicating to staff", "supervises and evaluates instruction", "maintaining visibility" and "monitoring student performance" were included in the regression.

Table 3 indicates that, when the seven independent variables were regressed on achievement, 49% (adjusted R^2) of the variance

Table 2: Pearson Coefficient correlations among variables (N=256)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Frames the school goals and communicate to staff		0.18	0.15	0.24	0.27	0.14	0.1	0.12	0.23	0.09	.32×	.37×	.39×
2 Supervises and evaluated instruction			0.27	.33×	0.2	0.17	0.12	0.28	0.26	0.12	.14×	.34×	.38×
3 Coordinates the Curriculum				0.15	0.17	0.1	0.1	0.09	0.14	0.2	0.19	0.22	0.2
4 Monitors student performance					0.19	0.09	0.08	0.16	0.26	.37×	0.2	.35×	.32×
5 Maintains visibility						0.08	0.06	0.14	.34×	0.24	0.22	0.2	.35×
6 Provides incentives to teachers							0.05	0.22	0.2	.45×	0.2	0.17	.38×
7 Provides incentives to students								0.06	0.11	7	0.19	.40×	0.17
8 Promotes teachers professional development									0.25	0.18	0.22	0.2	.27×
9 Promotes academic standards										0.22	0.16	0.27	0.3
10 Teacher's experience											.32×	0.07	.33×
11 School size												0.18	.36×
12 Student SES department variable													.60×
13 Student's achievement													

× = $p < 0.05$, ×× = $p < 0.1$, ××× = $p < 0.01$

Table 3: Coefficients in the regression equation (N=256)

<i>Variables</i>	<i>B</i>	<i>SEB</i>	<i>T</i>	<i>P</i>
1) SES	0.2	0.04	3.20*	<.05
2) School size	-0.17	0.09	2.80*	<.05
3) Teacher experience	-1.4	5.35	-0.75	NS
3) Framing goals and communicating to staff ^a	0.15	0.05	3.00*	<.05
4) Supervising and evaluating instruction	3.44	2.99	1.07	NS
5) Maintaining visibility	-6.13	5.82	-0.9	NS
6) Monitoring student performance	3.3	6.12	0.74	NS

on achievement was explained. However, only SES, school size, framing goals and communicating them to staff appears to have a significant impact on student achievement. In sum, the data show that only one subscale of the ILB has a significant effect.

DISCUSSION AND CONCLUSIONS

A central issue facing those who study educational leadership is the question of whether principal instructional leadership behavior makes a difference. The norm in the educational community is that school principals are key actors in the school setting and influence the outcomes of schooling (Silins, 1993). The school effectiveness literature stresses the important role that the school principal plays in the effectiveness of the school. Therefore, the main purpose of the present study was to re-examine the effect of principals' instructional leadership behavior on school effectiveness when this is measured by student achievement.

Our main research questions are related (a) to the principal's time invested in the different domains of his/her instructional leadership behavior, (b) to the effect of the energy invested in those domains and student achievement, and (c) to the effect of the contextual factors such as teachers' job experience, school size and students' SES upon student achievement.

Our study shows that secondary school principals invest only some of their energy in their instructional roles. According to teachers' reports, secondary school principals maintain visibility, monitor student performance, coordinate curriculum and promote academic standards, while neglecting the other domains of instructional leadership, such as supervising and evaluating instruction, providing incentives to teachers and students, and promoting teachers' professional development. These findings support only partially what is known from

previous literature (Heck et al., 1990; Brewer, 1993; Harris et al., 1998). If we look at the formal duties expected from a secondary school principal in Israel, we may say that there is no detailed definition of the job. "The school principal has to run the pedagogical as well as the administrative of the school tasks" (Ravid, 1994). That definition supports those authors who see educational leadership an integrative concept. No separation between instructional and administrative functions (Hoy and Miskel, 1991). However, each principal has to decide what to stress in his/her role and what not according to his/her role perception. According to Gali (1981) and Goldring (1992) school principals prefer to delegate their instructional duties to head of departments and to concentrate their energy mostly on administrative and public relations aspects of their job. Pratt and Common (1986) explain that the management of a secondary school has a unique character - where principals focus their energy and time more in technical aspects of school administration such as planning, budgeting and supervising, and less on instructionally-related aspects.

As regards the second research questions it was found that the principal instructional leadership behavior domains which are significantly associated with student achievement were the following: (a) Framing school goals and communicating them to staff. This supports Brewer's (1993) research conducted in secondary schools and reinforces Drucker (1977) Managing by Objective (MBO) strategy. (b) Supervising and evaluating instruction and monitoring student performance. These two tasks were important factors in the school effectiveness literature (Friedman et al., 1988) and our study supports that of Hallinger et al. (1996). (c) Maintaining visibility: This was found to be an important factor in explaining student outcomes in a study of Andrews and Soders (1987). It seems that the presence of the school principal has an

impact upon the school learning climate and indirectly could have effect upon students achievement. (d) Promoting the academic standards . This factor was found to be an important variable related to achievement in most of the school effectiveness research (Rutter et al., 1970; Purkey and Smith, 1983; Ribbins and Burridge, 1994).

As regards the relationships between the contextual variables (teacher job experience, students' SES , school size) and student achievement, the results were not surprising. Previous studies have already recognized the strong correlation of school outcomes with teacher job experience (Biniaminov and Glasman, 1983; Lavy, 1999) students' SES (Coleman et al, 1966, 1983; Smilansky and Shephatia, 1977; Bourdieu and Passeron, 1990), and with school size (Odden, 1990; Robinson, 1990; Lavy, 1995).

The most striking result of this study is that in the regression analysis only one ILB subscale (domain), 'framing goals and communicating them to staff', was found to have effect on student achievement in secondary schools, while the other subscales of the ILB had no significant effect upon student achievement. This contradicts much of the effective school research which suggests that there are certain generic behaviors which should be engaged in by principals regardless of school setting. A possible explanation is that teachers in secondary schools are mature professionally that do not need supervision, evaluation and standards to do their job and framing school goals and communicating to staff is enough .

From the contextual variables only school size and student SES were found to effect student achievement, while the effect of SES upon student achievement is well grounded in research, school size effects upon student achievement are not clear .

Following the results of the present study, it seems that principals' instructional behavior is mostly significant in big schools with a high percentage of lower SES students . In Israel big schools are mostly heterogeneous, with a high percentage of low SES students, and it is expected that teachers working in those schools need more supervision than teachers working in small schools which are, usually, homogeneous and with high SES students (Chen et al., 1971).

Looking at our data, we may conclude the following:

1. Instructional leadership effect upon student achievement is indirect, through school principal behaviors which affect teachers and school culture directly and indirectly student achievement.
2. Instructional leadership is not enough to explain the whole variance in students achievement at school level. We may suppose (besides school size and students SES) that the explanation of the variance in pupil achievement at the school level has to be shared with other factors, like the quality of the curriculum, the attentiveness of pupils, the opportunity to learn, the quality of instruction and the capacities and motivation of teachers, which were not tested in this study.
3. Furthermore, it seems that "counting the few votes" supporting the positive effect of the secondary school principal's instructional leadership behavior upon student achievement is not convincing, and may be that need to change then the study methods, instead of continuing with "outliers" studies, it may be necessary to design quasi experimental study with control groups and pre tests and post tests on students achievement in which educational leadership is the experimental variable.

NOTES

1. The high school principal in Israel is appointed by a joint committee comprised of delegates from the Ministry of Education, the Local Education Authority and the Unions. He/She is expected to run the school in all its aspects, administrative as well as pedagogical (Ravid, 1994).

Usually, candidates for the job are senior teachers who have experience as head of department or deputy head. In the last decade, more and more retired Army officers (usually at age of 45) who have a degree in education try for school principal as a second career.

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