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Keywords

change, principal effects, student learning, urban schools, Change Facilitator Style

Examining Relationships between Urban Principal Change Facilitator Style and Student Learning^{1,2}

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Abstract

The Change Facilitator Style of all 27 elementary school principals and student test scores in one urban school district were examined. Analysis of covariance was employed to identify relationships between principal Change Facilitator Style and fifth-grade student scores on the Connecticut Mastery Tests in writing, editing & revising, reading comprehension, and a total score and two subscores for mathematics (computational and conceptual). Students in Initiator and Manager CF Style schools had significantly higher test scores in comparison with students in schools with Responder CF Style principals. Students in schools with Manager CF Style principals had higher computational and conceptual mathematics subscores when compared with students in schools with Responder CF Style principals.

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The urban city, in the northeast of the U.S. where this study was conducted, is a graphic example of the pressing needs and context that make improving student learning so challenging. The school district was consistently among the five lowest scoring school districts in its state in reading and mathematics, and at all grade levels. The city leads the state in adult illiteracy and has the highest percentage of adults without a high school diploma. In addition, the city has the lowest average per capita income, with 93% of its families qualifying for free and reduced lunch compared to a state-wide level of 22%. Moreover, more than 57% of the public school students come from non-English speaking families, with some schools having over 85% English Language Learners. Of the approximately 24,000 students, 53% are Latino, and 40% are African-American. One additional indicator of past performance in this district is that in 1999 it was taken over by the state. Over the next five years there was a gradual return to local control. In a way that has some degree of irony, this school district is in the capital city and located within a state that has some of the most affluent communities in the nation.

In this setting, as with many others, schools are the primary institutions that provide services to children and

families. As with other communities, the quality of the teachers and site-based leadership are seen as critical keys. In conjunction with the state takeover, with support from the Wallace Foundation LEAD Initiative, between 2001 and 2007 a concerted effort was implemented to develop a new generation of urban school leaders. A Leader Succession Model was developed that included a career path from Aspiring Teacher Leader to Mentor Principal. At the end of five years of developing and testing this leader development and succession model, a key question was asked: Are these new leaders making a difference in student learning? The study reported upon in this paper examined a major component of this bottom-line question.

Principal and Teacher Effects Literature

There has been long standing agreement among practitioners, researchers, policy makers, and parents that teachers make a difference in student learning. The earlier Correlates of Effective Teaching studies conducted in the 1970s and 1980s by Brophy and Good (1986) and Evertson (Evertson & Weinstein, 2006), as well as the more recent studies of others, have documented clear relationships between particular teaching behaviors and student test scores. The Tennessee STAR studies and Sander's Value Added model of the 1990s further documented strong relationships of teachers with student learning (Finn, Pannazzo, & Achilles, 2003). The many

¹A preliminary report of this study was presented at the 25th Annual Conference of the Northern Rocky Mountain Education Research Association Conference, Jackson Hole, WY, October 2007.

²An earlier version of this paper was presented at the annual meeting of the American Education Research Association, New York, NY, April 2008.

Table 1. *Change Facilitator Styles* (Hall & Hord, 2011)

Initiators have clear, decisive, long-range policies and goals that transcend, but include, implementation of the current innovation. They tend to have very strong beliefs about what good schools and teaching should be like and work intensely to attain this vision. Decisions are made in relation to their goals for the school and in terms of what they believe to be best for students, which is based on current knowledge of classroom practice. Initiators have strong expectations for students, teachers, and themselves. They convey and monitor these expectations through frequent contacts with teachers and setting clear expectations of how the school is to operate and how teachers are to teach. When they feel it is in the best interest of their school, particularly the students, Initiators will seek changes in district programs or policies, or they will reinterpret them to suit the needs of the school. Initiators will be adamant, but not unkind, as they solicit input from staff, and then decisions are made in terms of the goals of the school, even if some are ruffled by their directness and high expectations.

Managers place heavy emphasis on organization and control of budgets, resources, and the correct applications of rules, procedures, and policies. They demonstrate responsive behaviors in addressing situations or people and they initiate actions in support of change efforts. The variations in their behavior are based in the use of resources and procedures to control people and change processes. Initially, new implementation efforts may be delayed since they see that their staff are already busy and that the innovation will require more funds, time, and/or new resources. Once implementation begins, Managers work without fanfare to provide basic support to facilitate teachers' use of the innovation. They keep teachers informed about decisions and are sensitive to excessive demands. When they learn that the central office wants something to happen in their school, their first questions will be about available dollars, time, and staffing to accomplish the change. Once these questions are resolved they then support their teachers in making it happen. As implementation unfolds they do not typically initiate attempts to move beyond the basics of what is required.

Responders place heavy emphasis on perception, checking and listening to people's feelings and concerns. They allow teachers and others the opportunity to take the lead with change efforts. They believe their primary role is to maintain a smooth running school by being friendly and personable. They want their staff to be happy, get along with each other, and to treat students well. They tend to see their school as already doing everything that is expected and not needing major changes. They view their teachers as strong professionals who are able to carry out their instructional role with little guidance. Responders emphasize the personal side of their relationships with teachers and others. They make decisions one at a time and based on input from their various discussions with individuals. Most are seen as friendly and always having time to talk.

professional development efforts to introduce teachers to the latest research-based curriculum and Marzano's (2003) *Effective Teaching Strategies* are more recent indicators of the belief that teachers make a difference in student learning.

There also is a gradually emerging picture of the role and effects of principals. Principals have been studied in terms of the requirements for the job and their needs for mentoring, professional development, and support (for example, see Daresh, 2001). Researchers have explored principal influence on instruction and supervision (for example, see Marks & Nance, 2007), and the relationship of principals and school culture has been explored (for example, see Reeves, Dec 2006/Jan 2007). Leithwood, Patten, and Jantzi (2010) have had a continuing series of studies of principal effects including explorations of influences on student learning.

However, there is a continuing need for more studies ranging from the large sample surveys to small sample in-depth close observations of principal leadership. There also are needs for studies that examine particular contexts such urban, low SES, and high diversity.

The study presented herein examined aspects of this problem with a set of elementary school principals in one at-risk urban school district. The study draws on the concept of principal Change Facilitator Style (CFS) and their relationships with student performance

on state tests. Significant statistical relationships were found between different principal CF styles and students having higher/lower test scores.

Principal Change Facilitator Styles

The construct of Change Facilitator Style has emerged and developed over the last three decades. The first tentative identification of different principal styles came out of a three-year study of implementation of a new science program in one large suburban school district (Hall, Hord, & Griffin, 1980). The study focused on assessing teachers' Stages of Concern, Levels of Use, and Innovation Configurations (Hall & Hord, 2011). Although the teachers in all 50 plus schools had received the same curriculum materials and same workshops, their extent of implementation was not the same. The schools were placed into one of three groups in terms of how far implementation had progressed.

In consultation with school district office administrators the hypothesis was constructed that the differences in extent of implementation was due to how the principals had facilitated the change process. In one group of schools the principals had been very active in setting expectations and supporting all teachers implementing the new curriculum. The principals in the second group of schools focused mainly on organizing

materials and seeing that time to teach science was scheduled. In the third set of schools the principals believed that their teachers knew what to do and provided little direct support or monitoring of implementation. This analysis led to proposing three Change Facilitator Styles: Initiators, Managers and Responders. The formal definitions of each Change Facilitator Style are presented in Table 1 .

Each of the CF Styles represents a composite of individual actions and leader emphases. For example, Initiators have a long-term vision for their school, and their day-to-day decision making is aligned strategically to lead the school toward accomplishing that vision. Managers focus on organization structures such as control of budgets and following rules and procedures. Responders are seen as “nice” people who listen to teacher concerns and let others take the lead. Each of these CF Style leaders spend their time differently and emphasize different themes as they interact with their teachers, parents, and district office administrators.

To determine if the three Change Facilitator Styles (CFS) existed, a major-year-long-study, The Principal Teacher Interaction (PTI) Study, was undertaken. The study took place in three different school districts and implementation of three different elementary school curricula. In each district a panel of district office administrators used the emerging definitions of the three CF Styles to identify three principals, one potentially representing each of the styles. The study method was qualitative, with the expressed purpose of documenting all innovation related behaviors that each principal took across the full school year. Data sources were a combination of observations, interviews, and document reviews. The outcome of the study was initial confirmation of three CF Styles and identification of an array of behaviors that comprise each style (Hall et al., 1980).

An additional component of the PTI study was to look for relationships between principal leadership and extent of teacher implementation of the identified program. This would be a clear example of Hallinger and Heck’s (1996) Model A, Direct Effects. In the study a strong relationship ($r = 0.76$) was found between the CF Style of the principal and extent of teacher success in implementing the new curriculum. Subsequent research in the U.S. (Hall & George, 1999) and other countries including Australia (Schiller, 2003), Belgium (Vandenberghe, 1988); and Taiwan (Shieh, 1996), have further established the existence of these different approaches to change leadership and their direct

relationships with teacher success in implementing technology, curriculum, and instruction innovations.

There have been several consistencies in the findings across the various studies. Teachers have significantly greater implementation success with Initiator and Manager CF style principals. In general, the greatest implementation success is found in schools with Initiator CF Style principals. In all studies, teachers have the least implementation success in schools with Responder CF Style principals. The construct of CF Style was applied in the study reported herein as the way to both account for the overall style of urban elementary school principals and to associate each with characteristic leader emphases, priorities, and individual behaviors.

One Urban Public School District

The urban school district is in a northeastern state and represents most, if not all, of today’s issues and concerns related to public schools in urban settings and the needs of at-risk students and families: majority/minority student population, 68% free/reduced meals, with 46.8% speaking a language other than English at home. A positive indicator of the state’s concerns about the district’s low performance was the 1999 state takeover. The school board was disbanded and a citizen board appointed. A new superintendent was employed who immediately targeted test scores, curriculum alignment, and the provision of training and professional development for all teachers and site-based administrators. He brought in a new executive team and challenged everyone to think more about increasing student learning by improving curriculum, instruction, and site-based leadership.

In the first several years of the takeover, there were promising indicators that test scores had bottomed out and were beginning to move in positive directions. Although it is not central to the study reported herein, at the end of five years the district was returned to local control, and more recently, the promising trends have not developed further.

Developing a New Generation of Principals for Urban Schools

At the same time as the state takeover was unfolding, the district received a five-year Wallace Foundation LEAD grant. This grant provided the district with the rare opportunity to develop and test an innovative approach to developing a new generation of leaders for urban

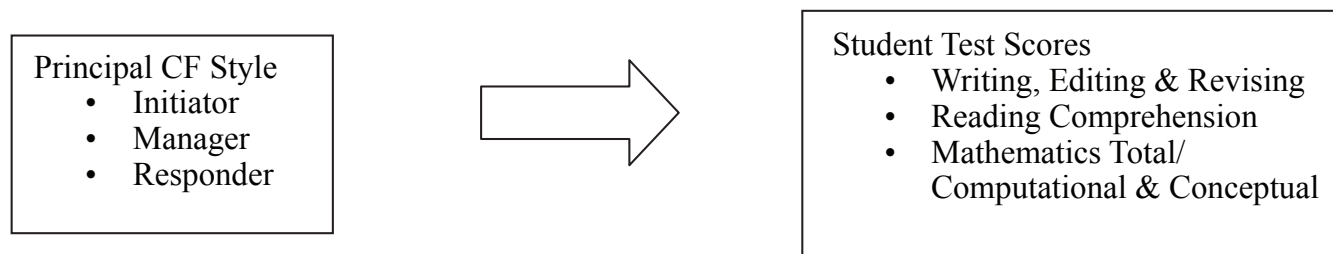


Figure 1. Model of CF Style (direct) affects on student learning

schools. This initiative also provided the opportunity to look for relationships between principal CF Style and student learning. Over the five years of the grant, the district developed and tested a Leader Development and Succession Model. The final form of this model had five career ladder steps ranging from Aspiring Teacher Leader to Lead Principal. Each level had purpose-built training and professional development. “Graduates” of this program who were principals in the 2005-06 school year were the population for this study.

Study Design and Methods

In their reviews of the principal-effects literature, Hallinger and Heck (1996; 2011) have made clear that there must be careful consideration of when there may be direct effects versus “mediated” vs. a “reciprocal process.” In most cases, rather than principals having direct effects on student learning, their influences are indirect and mediated through teachers. Also, there will be reciprocal effects as principals are affected by teachers, students, and others. The basic model for this study is an adaptation of Hallinger and Heck’s (1996) Direct Effects Model A (See Figure 1).

The following data sets were organized and used in the data analyses:

Principals in all 27 elementary schools for the 2005-06 school year were the population for this study.

Student Demographic Data (including mobility)

Test Scores as the dependent variable were Connecticut Mastery Tests (CMT) in Direct Assessment of Writing, Editing & Revising, Reading Comprehension, and Mathematics. Test scores from the forth-to-fifth grade transition comprised the pre-post scores. This transition

was chosen due to changes in the state’s testing schedule from fall to spring. Even though the tests were not identical, as the grades and test generations changed, we expected a high correlation between the various test content areas from one year to the next. Scores for students tested in the fall of 2004 in the fourth grade and spring of 2006 in the fifth grade were used. Only students ($n = 1090$) who were in the same school for both assessments were included in the analyses.

Change Facilitator Style of the principals was the independent variable. Three district office administrators served as the expert panel to assess the CF Style of each principal. Using the established definitions of Change Facilitator Style, the panel met with the researchers to develop a consensus rating of each principal. Each member of the panel had been employed in the district’s central office for several years and had continual first-hand knowledge of the leadership approach of each principal. Also, these staff members were selected as ones who had deep knowledge of the day-to-day leadership behaviors of each principal. This method for rating Change Facilitator Style has been used in previous studies (for a summary, see Hall & Hord, 2011).

Responder Manager Initiator
0 ----- 30 ----- 60 ----- 90 ----- 100

In this approach to rating principal CFS, two to three informants who know each principal well are asked in consultation with the researcher to come to consensus about the CFS rating of each. The rating is based on the formal paragraph definitions of the three CF Styles. A number line that ranges from 0 to 100 is used, with the archetype Responder placed at the 30 point, the Manager at the 60 point, and the Initiator at the 90 point. The researcher facilitates the discussion by reminding the panel to keep in mind the CFS paragraph definitions and

Table 2. Results of Analysis of Covariance between ratings of principal Change Facilitator Style and student scores on Connecticut Mastery Tests

CF Style	2006 Total Math Raw Score	2006 Reading Comp. Raw Score	2006 Direct Assessment of Writing	2006 Editing & Revising Raw Score
Initiator	79.1	24.2	7.56	19.6
Manager	82.0	23.2	7.44	19.0
Responder	77.8	22.3	7.26	18.3
<i>F</i> -ratio	6.84	6.53	2.78	3.80
<i>p</i> -level (CFS)	.001	.002	.062	.023
Significant Pairwise Comparisons	Mgr > Init Mgr > Resp.	Init > Mgr Init > Resp	Init > Resp	Init > Resp

asking for examples of observed principal behavior that illustrate the rating. Consensus is reached when all panel members agree upon the number point between zero and 100 that represents the subject principal.

In this study, the three member panel had no difficulty in coming to consensus and providing confirming anecdotes that were illustrative of each principal's behaviors and overall style. "As long as he continues, the rule book will get bigger." "He breaks all the rules and, you know, they get a lot done." "She wants everyone to get along and be happy."

Statistical Procedures

Analysis of Covariance (ANCOVA) was the main statistical technique. ANCOVA requires three measurements, the dependent variable, the independent variable, and a predictor variable referred to as the "covariate."

ANCOVA requires two data points for each individual student, often referred to as "pre" and "post" scores. While it is often advantageous to use exactly the same test for both pre and post scores, this is not absolutely necessary. The essential characteristic of a good "pre" measure is that it is an assessment of ability in the same content area as the "post" measure. It is the correlation between pre and post assessments that gives the ANCOVA analysis its power. If the post measures are accurately predicted by the pre measures, then the effects of the treatment can be more readily determined. In this study, state test scores for each student from the prior school year were used as the pre scores.

Relationships of Change Facilitator Style (CFS) with Student Learning

Statistically significant relationships were found between the principal's Change Facilitator Style categorical ratings and student achievement on three of the four tests. These findings are summarized in Table 2.

The data analyses offer several significant findings:

1. Students in schools with "Manager" CF Style principals do significantly better on the fifth grade Math test than those in schools with either "Initiator" or "Responder" CF Style principals.

2. Students in schools with "Initiator" CF Style principals do significantly better on the fifth grade Reading Comprehension test than those in schools with either "Manager" or "Responder" CF Style principals.

3. The predicted average Direct Assessment of Writing Scores, based on fourth grade scores, was highest in "Initiator" led schools, lower in "Manager" led schools, and lowest in "Responder" led schools. Overall, these differences were not statistically significant. That is, the estimated probability that differences of this size or larger could be observed using these sample sizes, and given the variance in scores, is not less than 5%. It is very close however, at 6.2%. Pairwise comparisons reveal there is a statistically significant difference between the student's scores in "Initiator" led schools over the "Responder" led schools.

4. Students in schools with "Initiator" CF Style principals do significantly better on the fifth grade Editing and Revising test than those in schools led by "Responder" CF Style principals.

5. Also, students in schools with “Manager” CF Style principals have higher predicted 2006 Math test scores than students in schools with “Responder” CF Style principals; however, this difference was not statistically significant.

Isolating Math Computational and Conceptual Strands

Upon reviewing these contrasting patterns of effects, where students in Manager led schools did better in Math while students in Initiator led schools did better in Reading and Writing, the research team speculated that separate components of students’ math scores might have different relationships with CF Style than was found with the overall score. Specifically, the question was whether math strands that contained primarily “computational” items might have different outcomes than math strands consisting of primarily “conceptual” items. To examine this hypothesis, a secondary statistical analysis was done.

It appears from this analysis that the higher achievement on the computational subscale is closely related to the CFS, with students in “Manager” led schools doing better. However, while the pattern is similar for the primarily conceptual subscale, the statistical significance is lacking.

Discussion

This study was conducted as part of a five plus year effort in one school district to increase the leadership skills of current and aspiring principals. The school district, as is true for many urban districts, had been facing many demographic, economic, and political challenges. With high proportions of at-risk and minority students, improving schools and student learning is a never ending struggle. The populations for this study were the district’s 27 elementary school principals and their fifth-grade students.

Several cautions should be noted when considering the study findings. Only one school year and one age cohort of students were studied. Another limitation is that reliability of the consensus ratings of principal Change Facilitator Style was not systematically checked against another way of determining CF Style. For example, a request could have been made for teachers to appraise their principal’s leadership using the Change Facilitator Style Questionnaire (Hall & George, 1999). Still, as the school year unfolded there were many anecdotes about

many of the study principals that seemed to confirm the consensus ratings. An additional caution is to keep in mind Hallinger and Heck’s (1996; 2011) limitations about assuming direct effects.

The discussion below uses examples of individual leader behaviors to illustrate how each of the three CF Styles appears to be related to student learning.

A) Differences in principal leadership can be associated with differences in student learning

The many statistically significant findings in this study lend credence to the premise that principal leadership makes a difference in student learning. Each CF Style represents a behavioral profile of a way that some principals provide leadership. Earlier studies have repeatedly observed strong relationships between CF Style and teacher success when implementing new curriculum and instruction innovations. In those studies implementation success was consistently found to be higher in Initiator and Manager led schools.

Similar trends were found in this study related to student learning. Students in Initiator and Manager CF Style schools had higher outcomes. Students in Responder led schools were consistently the lowest.

B) Exploration of why students in Initiator and Manager CF Style schools were higher on most CMTs

Clearly their needs to be more studies like this one before conclusions can be drawn with any certainty. At this point, based on the findings in this study, the following patterns and themes can be proposed. First, Initiator CFS principals lead their schools with a vision; they have passion about their school; and they push teachers, students, parents, and the district office to support the school. They also have what we have called strategic sense (Hall & Hord, 2011). They see that each small leader-to-teacher interaction is tied to a larger strategy that keeps the whole school moving in the same direction. Initiators are driven by doing those things that they think will improve student learning. A characteristic expectation of Initiators is “lead, follow, or get out of the way.”

Managers focus on controlling resources and treating everyone equally. Schedules, procedures, resource allocations, and budgets are all carefully controlled and allocated so that all staff have the same support and working conditions. Their attention is centered on structuring tasks, establishing schedules and assignments, and allocating resources. A characteristic expectation of Managers is having everyone “follow the rules and procedures.”

Responders focus on listening to people’s concerns

and letting their “strong” and individualistic teachers do the teaching. Responders focus on the day-to-day and moment-to-moment. They welcome others taking the lead and letting their teachers handle instruction. A theme with Responders is “wanting everyone to get along and be happy.”

It seems likely that the Initiator’s press for increasing student learning becomes the shared agenda for teachers, which results in their students doing better. Initiators support their teachers and have high expectations. They exhibit the five sets of effective leadership practices identified by Robinson, Lloyd, and Rowe (2008): “establishing goals and expectations; resourcing strategically; planning, coordinating, and evaluating teaching and the curriculum; promoting and participating in teacher learning and development; and ensuring an orderly and supportive environment” (p. 635).

The structural supports of Managers likely provide stability and consistency in expectations related to schedules, instruction, and the design of lesson plans. However, their focus is mainly on the structures rather than striving to achieve a higher vision. Another key difference between Managers and Initiators is the press to always be doing more. Initiators continually strive for more and better efforts, while Managers prefer stable routines. Responders, on the other hand, do not bring a consistent focus or press related to increasing student learning. Each staff member is free to approach teaching pretty much as he/she likes.

C) Exploration of why students in Manager CF Style schools scored higher in mathematics

At first the finding that students in Manager CFS led schools did better in mathematics than students in Initiator CFS led schools was a dilemma for us researchers. After discussions with the school district’s mathematics coordinator and other colleagues, a plausible explanation emerged. Put simply, it appears that Managers bring structure and order to how their teachers prepare and teach daily. Schedules are established and procedures are in place. There is a uniform format for lesson plans and an expectation that math will be taught.

“She (Manager CFS Principal) knows what comes into the building. She knows everything that goes on in the building. She expects teachers to know where they are each day in their lessons and to have prepared a thorough plan. She has binders for everything!” (School District Math Coordinator)

Initiator CFS principals also support their teachers, have expectations for lesson design, and support high quality instruction. In addition, they have expectations

for “more” to be done. In this study the Initiator CFS principals were not just focusing on preparation for this year’s testing, they added the expectation for teachers to teach for higher order thinking and conceptual understanding. Developing conceptual understanding takes more effort and longer time for teachers and their students than is needed to develop computational knowledge and skill. It seems possible that the extra effort to develop conceptual understanding over time becomes a trade off with the consequence being less effort devoted to developing computational knowledge and skill.

The findings from this study suggest that the Manager CFS approach seems to work best for end of fifth grade testing. In other words, the Manager’s focus on lesson plans and structures appears to lead students doing well on that year’s annual state testing. However, as the district’s Mathematics Coordinator and others have hypothesized, the long-term story may have a different ending. The suggestion is that success changes when these students arrive in middle school. It appears that students from Initiator CFS elementary schools, who have had more emphasis on conceptual development of understanding, are more successful in seventh and eighth grade, when algebra and other higher order concepts are being introduced. Students from Manager CFS schools appear to fall behind.

If this hypothesis is true, having a heavy focus on achieving short-term higher computational scores may have a long-term opportunity cost. Although slower to master, efforts to develop conceptual understanding in the intermediate grades may pay a dividend in middle school. Another implication of this hypothesis is that the current state and federal policy preoccupation with annual snap shots and rewarding schools for short term, i.e., annual gains in test scores, may accrue long-term detriments. Policies that focus on multi-year and longitudinal gains would likely have very different results in terms of student learning outcomes.

D) Exploration of why students in Responder CF Style schools were significantly lower on all CMTs

It appears that being highly organized, providing consistent expectations and press, and articulating a vision are not the strengths of Responder CF Style principals.

“He didn’t even know what was in his school. He hired a retired teacher; she comes in and drills the kids. When they get to eighth grade they bottom out.” (District Math Coordinator)

In this study, as well as the earlier studies of teacher

innovation implementation, Responder CF Style principals are associated with less success. Their concern about people's feelings and allowing each teacher to be independent seem to lead to lower school-wide success. Striving to have everyone be happy does not lead to easy or full implementation of new practices.

Suggestions for Future Research

An important next research step would be to conduct similar studies in other settings and with other grade levels. In conducting such studies, one of the challenges is being able to access quality data bases of student test scores. The data base has to connect individual students with the teachers who actually taught the subjects. Another challenge is the rate of student transition, especially in urban settings. Loss of subjects is a major difficulty in longitudinal studies. For example, in this study, of the 1,889 different students in the data base, 300 (15.9%) were only listed in fall of 2004, 249 (13.2%) only in spring 2006, and 250 (31.2%) were listed both times but in different schools.

Another important research agenda would be to examine the patterns of individual student test scores as they progress from fourth grade to eighth grade. A hypothesis that has emerged out of analysis of the findings in this study suggests that the short-term gains in computational mathematics may not pay off as well as focusing on the more long-term development of conceptual understanding.

This finding also has policy implications. As with so many other aspects of American life, currently schools are rewarded for short-term outputs, a.k.a., annual growth scores, rather than how well their students do over several years. Developing a longer term accountability model would require a paradigm shift of major proportions.

Implications for Leadership Development Programs

One of the reviewers of an earlier version of this paper requested that we offer suggestions for "Lessons learned that others could apply to their principal training programs." The findings from this study are from only one setting, which makes extrapolations to professional development and preparation programs too great a leap to be taken seriously. However, we have given some thought to the "what if."

A very important foundational point is whether, or to what extent, an educational leadership faculty believe

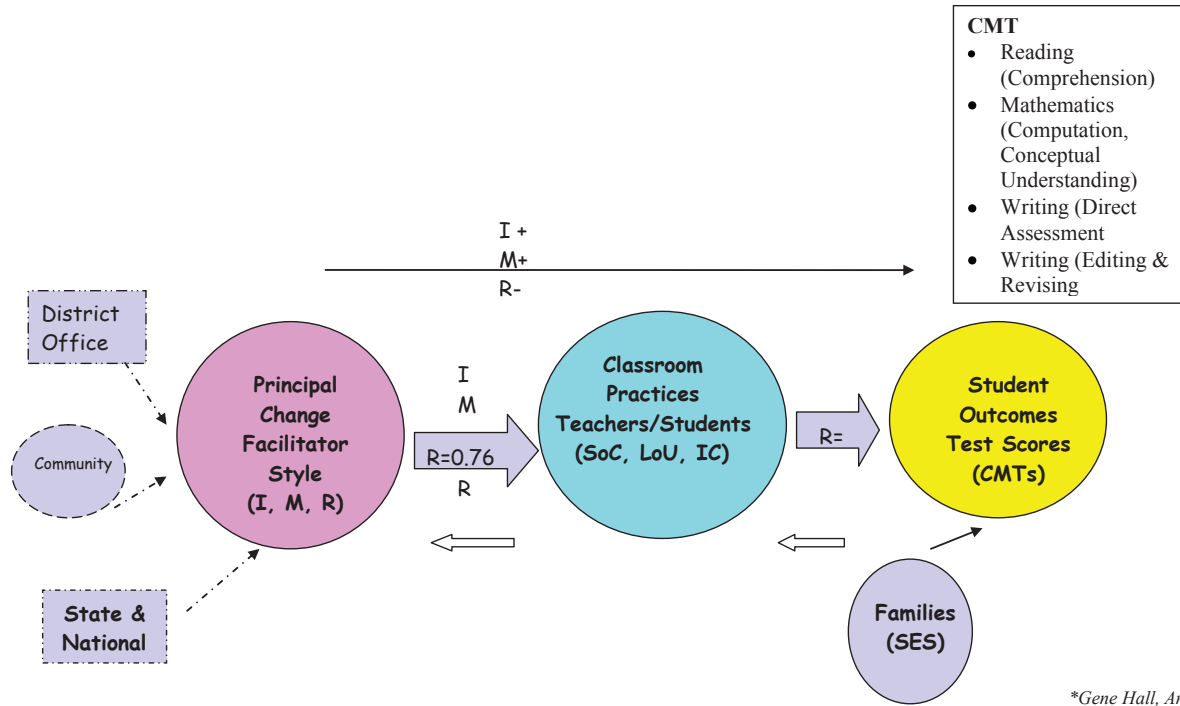
that school leaders can change their style. As we know, classic theorists such as Fredrik Fiedler (1998) and the works of Hersey and Blanchard (1993) advocate for the leaders changing their style depending on the "situation." In our studies, we have always made a distinction between the Gestalt of style and individual behaviors. Our position is that changing one's style is not easy, or quick, if it is possible at all. Instead of changing one's overall style, leaders need to adapt their behaviors from setting to setting. However, teachers will interpret individual behaviors of leaders in terms of the context of their overall style. For example, the principal behavior of asking a teacher, "How is it going with mathematics?" will have a very different contextual meaning for a teacher when this question is asked by a Responder, or a Manager, or an Initiator.

Given this view, an important consideration in leadership preparation programs would be on developing an understanding of one's style as context for the many individual leader behaviors. A second topic would be to develop a repertoire of leader behaviors that match certain situations and also are understood within the context for particular styles. A third topic would be to learn about the relationships between CF Style and characteristics of leadership teams. Different CF Style leaders probably will have different styles on their leadership teams. An additional content for leadership preparation programs and principal professional development would be to learn about and explore hypotheses about the relationships between CF Style and organization culture, and CF Style and leader succession (Hall, 2001).

See Figure 2. Integrated view of principal effects on teacher implementation and student outcomes/drawing connections between leader behavior and student learning.

Summary

Figure 2 is offered as a graphic summary of how the findings of this study can be integrated with the findings from the earlier implementation studies. The figure takes into account Hallinger and Heck's (1996) direct, mediated, and reciprocal models. Classrooms, school leadership, and student outcomes are placed within the greater organization environment of the school district and community. A central component of the figure highlights the importance of understanding and documenting implementation of new practices at the individual classroom level. Also represented are indications of what has been found in various studies.



*Gene Hall, Archie George

Figure 2. Drawing connections between leader behavior and student learning*

One set of concepts and research verified findings presented in this figure is how implementation is assessed at the classroom level. In this case the three diagnostic dimensions of the Concerns Based Adoption Model (CBAM) are noted. These tools are (1) Stages of Concern (SoC), (2) Levels of Use (LoU), and (3) Innovation Configurations (IC). Each has been the subject of several decades of study. Each of these dimensions can be used individually and in combination to describe and measure the extent of implementation of an innovation in individual classrooms, and/or across a school or system (Hall & Hord, 2011). The findings from each classroom can be aggregated across grade levels, schools, districts, and in other ways such as clustering by extent of implementation.

A second part of Figure 2 represents the relationships between the Change Facilitator Style of school principals and individual teacher success in implementing new programs and practices. As was reported above, over the last 20 years a number of studies have found significant relationships between the Change Facilitator Style of the principal and teacher success in implementing new curriculum approaches. In the first of these studies, the correlation was 0.76.

In more recent studies the extent of teacher implementation of instructional innovations has been

linked with student outcomes. For example, in a major study of standards-based teaching of mathematics, the students of teachers who had moved further across the “Implementation Bridge” had significantly higher test scores (George, Hall, & Uchiyama, 2000).

The study reported in this paper suggests an additional relationship between implementation of new practices and student outcomes. The findings suggest that there are ties between how the principal leads the school and student outcomes. These linkages are independent of the well documented affects of principal CF Style on individual teacher implementation success. In some ways yet to be fully explained principal leadership affects student learning. Most likely, as Hallinger and Heck (2011) have theorized, the effects of principal leadership are a combination of direct, indirect, and mediated. Principals affect each teacher, the whole school, some individual students, and all students in some ways. Important next steps in research would be to weigh these different components. In this study there appear to be cross-school effects that are independently attributable to principal leadership. One important next step in research would be to weigh these different components in one complex design, as Hallinger and Heck (2011) have recommended.

There are several possible analytic approaches to

filling in the blanks in the model presented in Figure 2. One would be through causal modeling, another approach would be Structural Equation Modeling. Another would be a regression technique (Baron & Kenny, 1986; Reynolds & Anderson, 1982). A team of researchers tested the use of regression in the secondary analysis of data from a multi-year evaluation of Empowerment Schools. Although the sample size was limited, the analyses found that Responder principals had significant negative influence on teachers' self-efficacy and on student reading gains, while Initiators had a significant positive influence on teachers' self-efficacy and student reading gains (Cohen, Boggs, Reynolds, Marchand, & Hall, 2012). A weakness with each of these analysis techniques is that they are directional. To address Hallinger and Heck's (2011) reciprocal effects model requires applying their more complex "cross-lagged autoregressive model."

The findings from the set of studies summarized in this paper also have implications for research and evaluation studies. For example, with the assumption that the findings hold, the preferred "gold standard" randomized designs need to take into account principal leadership, as well as classroom and student demographic factors. For now, this study has documented that in one at-risk urban school district the Change Facilitator Style of the principal was directly related to the amount of gains in student learning, and this association is independent of the direct effects of individual teachers.

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