1-1-2010

Implicit Models of School Improvement: A Mixed Method Analysis

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Recommended Citation

Academic Leadership Journal

There is a persistent belief that public schools are profoundly in need of improvement (Berliner & Biddle, 1995). Given substantial research on teaching literature (Borman, Hewes, Overman, & Brown, 2003; Hertling, 2000), it is not clear why more progress has not been made. Perhaps an answer may be found in the complexity of the educational literature, which provides a confused map toward accomplishing school improvement. Educational leaders are left in the position of relying on either imprecisely formulated or idiosyncratic and implicit models of school improvement without clear guidelines to follow for specific contexts. Models appear as *ex post facto*, reflecting an approach to educational reform on the part of administrators that may be best thought of as implicit.

According to this model, student academic achievement can be enhanced by improving teacher quality. This implicit model of school improvement may be called a **teacher quality model**. However this implicit model is limited by a number of factors, not the least of which is lack of agreement about a basic definition of teacher quality. Prior literature reveals multiple facets of the definition of the "good teacher" (Goodlad, 1994; Jules & Kutnick, 1997; Korthagen, 2004; Samuels & Griffore, 1980) and good or effective teaching (Denbo & Beaulieu, 2002; Ediger, 2002; Frymier, 1986; Little, 1984; Metcalf & Kahlich, 1998; Nelson, 1996).

A second model that is often reflected in school improvement is a **school climate model**, which suggests that school climate and achievement tend to be directly related (Anderson, 1982; Brookover, Schweitzer, Schneider, Beady, Flood, & Wisenbaker, 1978; **Esposito, 1999; Samdal, Nutbeam, Wold & Kannas, 1998**). To some extent this model also lacks agreement on a definition of school climate. The model, as implemented, may be considered implicit when it is recognized that school improvement has been attempted by trying to improve the environment for learning in schools.

A third model that may be reflected in school improvement may be called a **teaching climate model** (Burden, 1994; Fisher & Grady, 1998; Huang, 2001; Huang, 2006).For example Johnson and Stevens (2006) studied teachers' perceptions of climate in elementary schools using a modified School-Level Environment Questionnaire (SLEQ). Structural equation analysis of the data found a positive relationship between school mean teachers' perceptions of school climate and school mean student achievement. The SLEQ measures teachers' perceptions of several dimensions of school social climate including professional interest, participatory decision making, adequacy of resources, and work pressure (Fisher & Fraser, 1990), which are key elements of teaching climate. Not unlike school climate models, teaching climate models, as implemented, may be considered implicit when it is observed that school improvement has been attempted by trying to improve the environment for teachers in their effort associated with teaching.

The model by which a school district is guided toward improvement becomes a central governing force within the culture of a school district. It permeates the cultures of individual schools, and it shapes common beliefs, principles, elements and patterns of the entire district. Deal and Peterson (1999) define the components of school culture as norms, values, rituals, traditions, ceremonies, and stories. Along with these overt indicators of school culture, the norms of expected behavior are made clear by

exhibiting the logos and artifacts that symbolize the essential elements and patterns of the school culture. The cultures of successful schools can be distinguished from the characteristics of less successful schools (Phenice, Griffore & Schweitzer, 2006). Successful cultures can engage administrators, teachers, and staff as well as marshal parent and community support as part of the educational process.

In an effort to inform the community, educators have created school Web sites that are easily accessible for describing school culture. Virtual ethnography of school Web sites is becoming a popular technique (Griffore & Phenice, 2007; Hine, 2000; Mason, 1996; Wilson, 2006). Doerger (2002) suggests that components of school building Web sites may include a number of components, such as demographic information, school size, ceremonies, rules, and routines, working conditions, and other elements.

Method

A mixed-method analysis was conducted. The first step was a virtual ethnography of implicit school improvement models found on school district Web sites. The Web sites of the 67 members of the Council of Great City School districts were reviewed. Each district Web site was examined, focusing on concepts perceived to represent conceptual ingredients of school improvement for a district. The conceptual components associated with these models were examined and categorized. If information in this regard could not be readily located a district was eliminated from the analysis. Notes were taken regarding the available information, and QSR NVivo Version 7 was used to identify and cluster the concepts represented on Web sites.

In the quantitative portion of the study, correlations were computed based on data from a large school district. The purpose of the quantitative analysis was to determine whether student achievement is associated with factors that were identified with school improvement in the ethnographic portion of the study. Data used in the quantitative analysis were from an evaluation of progress toward goals of school improvement in the Detroit Public Schools (Green, Griffore, Hall, Phenice, Schweitzer & Zerbinos, 2003). The unit of analysis was the school, which was included in the sample if it had at least 5 responding teachers. Data were collected from Detroit Public Schools teachers on several variables in an effort to describe their characteristics and to measure their views concerning variables inherent in the educational contexts in which they were teaching. Questionnaires were distributed to teachers in their schools and were returned to the researchers by mail or directly through the administration. In the questionnaire, teachers reported descriptions and perceptions of their schools. Data for this analysis were from 4024 teachers in 130 schools, including 101 elementary schools and 29 elementary/middle schools in 2002.

Variables used in the quantitative analysis were selected as indicators of concepts that were observed to emerge from the ethnographic analysis. The quantitative analysis consisted of correlations and structural equations.

Results

Useful ethnographic data were found in the Web sites of 51 of the 67 school districts. There were 121 references to forms of ***administrative actions***, including statements such as maintaining facilities, financial stewardship, supportive operations, efficient and effective support operations, safe and

orderly schools and others. There were 71 references to *diffuse accountability*, such as building confidence, general accountability, multicultural, closing achievement gap, inclusiveness, and personal accountability. There were 57 references to concepts of *teacher and administrative collaboration* including items such as recognition of accomplishment, academic rigor, professional development, curriculum improvement, and governance. There were 21 references to *community* including communications with community, strong community, civic capacity, community resources, connecting with community, and community support. There were 18 references to *parents or families* such as communications with parents, strong parent connections, parent involvement, family support, family involvement, and family engagement. There were 10 references to what seemed to be recognitions of *complex systems effects*, including relationships between the superintendent, the board, staff and all community stakeholders, stakeholder engagement, collaborative school/community decision-making, and others. There were 10 references to *teachers* including qualified teachers, instructional excellence, skilled and empowered faculty, and high performing teachers. There were 9 references to *students* including self-management of learning, student interests, student behavior, student engagement, and discipline.

Because *administrative actions* emerged as an important concept in the ethnographic analysis, the quantitative analysis began with selecting the following administrative action variables from the dataset, which represent individual items in the survey instrument used to collect the data.

1. Problems in my school are caused by DPS administration.

2. I receive sufficient information that I need in teaching from the Detroit Public Schools administration.

3. The Detroit Public Schools are currently following a path that will bring about improved educational outcomes for children.

4. Detroit Public Schools administration maintains an effective reward and incentive system that motivates teachers to be effective.

For each item on the questionnaire, "Strongly Agree" was coded 1, and "Strongly Disagree" was coded 5. Thus items 2, 3, and 4 above were reverse coded by subtracting their recorded item values from 5. It was hypothesized that each of these items would be positively correlated with student academic achievement.

Teacher and administrative collaboration emerged as an important concept in the ethnographic analysis. Therefore the following teacher and administrative collaboration variables were selected from the quantitative dataset. These variables represent individual items in the survey instrument used to collect the data. It was hypothesized that high scores on each of these items would be positively correlated with student academic achievement.

1. Teachers and the principal thoroughly review and analyze test results to plan modifications in the instructional program.

2. The principal leads frequent formal discussions concerning instruction and student achievement.

3. The principal frequently communicates to individual teachers their responsibility in relation to student achievement.

4. Discussions with the principal often result in some aspect of improved instructional practice.

Again, for each item "Strongly Agree" was coded 1, and "Strongly Disagree" was coded 5. Thus these four items were all reverse coded by subtracting their recorded item values from 5. It was hypothesized that each of these items would be positively correlated with student academic achievement.

All of the above Likert-type items are considered in this analysis as interval-level data. In the wording of these items equal distance is implied by symmetrical language above and below the "neutral" level. In addition, teachers were provided with linear response scales on the questionnaires in which there were equal distances among levels of responses.

Concepts having to do with **teacher quality** emerged in the virtual ethnography. Therefore the following variables representing teacher quality were selected from the data. It was hypothesized that each of these items would be positively correlated with student academic achievement.

1. Mean years of teaching experience within a school.

2. Percent of teachers within a school who are certified.

3. Percent of teachers within the school who participated in professional development within the last year.

The very small amount of missing data was handled by imputing variable means. The dependent variable is Metropolitan Achievement Test reading scores from 2002 (MA). As shown in Table 1, this measure of achievement was not significantly correlated with any of the other selected variables, with the exception of percent of teachers within the school who participated in professional development within the last year. Contrary to expectations, this variable was inversely related to achievement.

Discussion

Based on the virtual ethnographic analysis of school district Web sites, it appears that school improvement is primarily represented as is in the hands of administrators. Web sites also appear to speak a language of diffuse accountability, teacher and administrative collaboration, community, parents, teachers, and students. There is a need to study the utility references of diffuse accountability and how they are used. References to diffuse accountability without a clear concept of how collaborative responsibility is manifested can become an ineffectual process of suggesting that action is desirable without ensuring that steps are taken to allocate specific responsibility. It is useful to note that other observers might examine the schools Web sites

Table 1. Correlations		MAT Elem Reading
Problems in my school are caused by DPS administration.	Pearson Correlation	-.060
	Sig. (2-tailed)	.503
	N	126
I receive sufficient information that I need in teaching from the Detroit Public Schools administration.	Pearson Correlation	.158
	Sig. (2-tailed)	.076
	N	127
The Detroit Public Schools are currently following a path that will bring about improved educational outcomes for children.	Pearson Correlation	-.012
	Sig. (2-tailed)	.897
	N	127
Detroit Public Schools administration maintains an effective reward and incentive system that motivates teachers to be effective.	Pearson Correlation	.112
	Sig. (2-tailed)	.209
	N	127
Teachers and the principal thoroughly review and analyze test results.	Pearson Correlation	.104
	Sig. (2-tailed)	.243
	N	127
The principal leads frequent formal discussions concerning instruction and student achievement.	Pearson Correlation	.105
	Sig. (2-tailed)	.239
	N	127
The principal frequently communicates to individual	Pearson Correlation	.116
	Sig. (2-tailed)	.194

used in the ethnographic portion of this study and find different conceptual factors and different frequencies of factors. In addition it is possible that the information presented on school district Web sites might not accurately reflect all facets of school improvement programs.

The outcomes of the correlation analysis are surprising and counterintuitive. None of the variables is associated positively with student achievement, and teachers' experience with professional development appears to be negatively associated with student achievement.

teachers their responsibility in relation to student achievement.	Sig. (2-tailed)	.194
	N	127
Discussions with the principal often result in some aspect of improved instructional practice.	Pearson Correlation	.109
	Sig. (2-tailed)	.224
	N	127
Mean years of teaching within the school	Pearson Correlation	.099
	Sig. (2-tailed)	.266
	N	127
Percent of teachers certified within the school	Pearson Correlation	.076
	Sig. (2-tailed)	.397
	N	127
Percent of teachers within the school who participated in professional development in last year	Pearson Correlation	-.223
	Sig. (2-tailed)	.012
	N	127

These findings are clearly dependent on the variables selected for this analysis. Different indicators might produce different outcomes. It should be noted that several of the selected variables are teachers' perceptions of the situations that existed in the school buildings. This fact leads to recognition of an important issue. These variables are in essence building level averages of personal attributes, and this limits generalizability to similar perceptions in similar contexts. .

It would be possible to build complex models involving interaction effects among personal attributes. However, even if one were able to demonstrate statistically significant interaction effects, these interactions would not be the equivalent of actual interaction process measurements. Thus it would be useful to have actual measures of interactions to explain why none of these selected variables is associated with student academic achievement in a way that one would anticipate.

Given the surprising finding that professional development is inversely related to achievement, it would be especially useful to measure processes of teachers interacting with these educational contexts. Environmental factors that surround teachers may impact on the success with which they can optimize educational outcomes (Karge, 1993; Karge & Freiberg, 1992; Ovando, 1992).

Some school administrators may choose to downplay the interactions of teachers with specific learning environments, perhaps for pragmatic reasons. It is very difficult and costly to implement unique school improvement models at the building level. Cluster strategies or district-wide strategies tend to be less difficult and costly to implement. However, the same strategies applied to diverse contexts do not produce the same outcomes. A school is an interconnected network of individuals who occupy particular structural and functional roles and positions. Their interactions and exchanges take distinctive forms, due to the uniqueness of human and nonhuman resources and structural-functional characteristics of particular schools. Within the context of a unique school ecosystem, predictions about the impact of indicators of teacher quality and school climate may be highly inaccurate and unreliable. As Bhattacharjee (2005) has pointed out, even with random assignment a treatment will be effective in some cases, neutral in some cases, and ineffective in others.

In a discussion of ecological models, Bronfenbrenner (1989) suggested that process – person – context models combine characteristics of the individual with attributes of the contexts and interaction processes. He refers to patterns of interactions with immediate environments as proximal processes

(Bronfenbrenner & Morris, 1998). Students, teachers, and administrators, engaged in unique interaction processes, may yield insights into how actions and decision-making within particular school contexts that are associated with improved school outcomes.

Discussing comprehensive school reform models (CSR), Borman, Hewes, Overman and Brown (2003) suggest that "differences in the effectiveness of CSR are largely due to unmeasured program-specific and school-specific differences in implementation". What are the unmeasured variables that moderate or mediate the effects of an intervention? This question can be answered by examining interaction processes in process – person- context models. These ecological research designs are gaining scientific recognition (Andelman & Willig, 2004; Phenice & Griffore, 2003) as alternatives to experimental designs, because they involve recognition of the existence of complex networks of unmeasured variables. Berliner (2002:19) has observed that "In education broad theories and ecological generalizations often fail because they cannot incorporate the enormous number or determine the power of the contexts in which human beings find themselves." This statement highlights the need for ecological perspectives that incorporate previously unmeasured variables, specifically unmeasured interaction processes.

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VN:R_U [1.9.11_1134]