

School Leadership View of Human and Organizational Factors in Performance Management: A Comparative Analysis of High- and Low-Performing Schools

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This study explored data use in schools, and human and organizational factors associated with performance management systems between high- and low-performing schools in Milwaukee Public Schools, a large urban school district in southeastern Wisconsin. Specifically, this research investigated school improvement planning and use of different types of academic data for decision support from the viewpoint of school leadership. Interviews with principals and observations of school improvement planning meetings were conducted to identify and describe (1) dimensions of data and data use and (2) the human and organization factors in school-based performance management systems between high- and low-performing schools. Implications for macroergonomic analysis in school-based performance management systems and differentiated designs for school support are discussed.

INTRODUCTION

District- and school-based accountability efforts continue to expand in dimensionality and breadth in the U.S. education reform movement. This expansion has included student testing for multiple grades and subjects areas, as well as increasing emphasis on high-stakes accountability (e.g., teacher merit pay, tenure reform). Central to performance-based accountability is the effective use of data at the school level to inform instructional decisions that support student learning. However, an Institute for Educational Sciences (IES) panel on the use of student achievement data for instructional decision-support conducted a systematic review of literature and found that the existing research on using data to make instructional decisions does not yet provide conclusive evidence of “what works” to improve student achievement (IES, 2009, pg. 6). The panel recommended a framework for using data to make instructional decisions; some of the recommendations included macroergonomic approaches, such as the use of data teams, collaboration structures, incorporation of the user (i.e., student) in data analysis and goal setting, and an inter-dependent approach (i.e., classroom, school, district integration) to manage school improvement.

One pathway to address the concerns raised in the IES panel is the performance management movement. Performance management in the education context refers to the improvement of district (and individual school) effectiveness via a rigorous base of data that is used to regularly assess district and school performance and hold managers accountable (adapted from Heinrich, 2007). Performance management in education also embodies quality and systems management principles, methods, tools, and processes at every level of a school district (American Society for Quality, 2002).

In this paper, we present a macroergonomic analysis of the human and organizational factors that may affect performance management, school improvement, and data use. We posit that a macroergonomic approach to performance

management in schools will enhance the design and implementation of data-centric improvement efforts. We also posit that high-performing schools are more likely to engage in performance management principles and approaches, use data in effective ways, and exist in a work system that supports human and organizational performance. To investigate this, we conducted an exploratory, comparative analysis of school leaders’ views of performance management in high- and low-performing schools in a large, urban school district. The specific research questions were to identify: (1) dimensions of data types and data uses within schools and (2) human and organizational factors that contributed to school-level performance management.

LITERATURE REVIEW

Performance management focuses on rigorous measures, processes, and organizational structures to enhance productivity and performance. The transfer of performance management principles and frameworks from business and other settings to education has included the development of teacher and principal accountability and evaluation systems (for example, see Milanowski, 2004) and indicator systems that measure student productivity, such as value-added metrics (Meyer & Christian, 2008).

Performance management in education has focused on district and school data use, processes, and structures and has emphasized the adoption of quality management practices at the school level. The three primary quality management frameworks adopted in education are the Baldrige Educational Criteria for Performance Excellence (Baldrige National Quality Program, 2010), the International Standards Organization’s (ISO) 9000 standards in education series (American Society for Quality, 2002), and Total Quality Management (Bonstingl, 2001; Garbutt, 1996).

However, there is a paucity of performance management research in U.S. K–12 education that reflects post-No Child Left Behind (NCLB) accountability standards and innovations

in data indicator systems like value-added. Further, the quality management approach in education does not fully integrate human and organizational factors, such as job content and design, human-system design and integration, task-person fit, and team performance.

Data use, or “data-driven decision making” is a research stream that shares some of the system characteristics necessary for effective performance management at the school level. School leaders and teachers are expected to effectively use data to inform school- and classroom-level improvements and evaluate their practices (IES, 2009). However, the quality of data available and the effectiveness of schools’ capacity to use data for instructional improvement vary. Schools and districts collect many forms of student data (e.g., attendance, behavior, coursework, grades, state-administered test results) as well as administrative data (e.g., staffing, scheduling, finance data), but it is rare for school leadership and teachers to use data to determine the root causes of reoccurring problems and analyze the impact of initiatives and programs (Tolley & Shulruf, 2009). Further, school leaders often conduct or evaluate their education programs on gut feelings with little formal analysis of how well those programs work and do not perform long-term planning for student improvement over time (Bernhardt, 2004).

Becoming a “data-driven” school is not just a technical endeavor; macroergonomic factors also contribute to effective use of data and knowledge creation for school and classroom improvement. School leaders and teachers are expected to work in team-based structures and collaborate across classrooms and grades to analyze data, design strategies, and implement improvements within various organizational conditions that also vary in school types. However, a recent review of the educational administration literature revealed that theory and research in school-staff teams lags far behind the current team models in organizational theory (Somech & Drach-Zahavy, 2007).

Yet, there is a strong need for sound organizational and team-based models that fit with the characteristics of school leaders and teachers, teams, task-structures, and school organization design. For example, tasks are often structured for the individual teacher. Teachers work within their classrooms with a high degree of autonomy and isolation from colleagues (Levine & Marcus, 2010). The transfer to team-work often encompasses incompatible goals and conflicting interests (Somech & Drach-Zahavy, 2001). Further, teachers typically teach in their classrooms individually, with limited opportunity to interact with colleagues to exchange information and cope with problems. In such a structure, teachers learn to work alone, rely on their personal talents and skills, and manage problems that arise in their classroom on their own.

METHODOLOGY

The study adopted an exploratory approach and used a field-based, qualitative design. The study consisted of cross-

case analysis of eight schools. Semi-structured interviews with principals and non-participant observations of “learning team” meetings were conducted at each school. Learning teams are groups of school leaders and teachers tasked with, among other responsibilities, analyzing data and planning school improvement efforts.

This study was conducted in collaboration with Milwaukee Public Schools (MPS). MPS is a large, urban district that serves 82,444 students in southeastern Wisconsin (MPS, 2010). MPS has been designated a “District Identified for Improvement” (DIFI). The DIFI status reflects the district’s failure to meet reading and math attainment standards since 2004, as defined by NCLB. Given the urgency to improve district performance under the DIFI designation, we were particularly interested in high- and low-performing school comparisons.

We defined performance at the school-level via value-added analysis. Value-added (VA) analysis measures school productivity and the contribution of schooling to growth in student achievement. It consists of statistical techniques that separate the impact of schooling from other non-school factors that may influence growth (Meyer & Christian, 2008). MPS uses attainment scores on the state test to designate schools as high- or low-performing. However, attainment is not a productivity measure like VA; it does not filter out prior academic achievement, student mobility, or other factors like race and socioeconomic status.

To address this discrepancy, we used a comparison of VA and attainment measures to select eight schools across four performance levels: high VA/high attainment, high VA/low attainment, low VA/high attainment and low VA/low attainment. High VA/high attainment and high VA/low attainment schools were defined as high performing. High VA/high attainment schools received students that tested high on attainment and whose scores grew faster than the district average. High VA/low attainment schools received students that tested very low on the state test and did not make the mandated proficiency goal, but whose academic performance grew faster than the district average. Low VA/high attainment and low VA/low attainment schools were defined as low-performing schools. Low VA/high attainment schools received students that tested very high, but these students grew slower in academic performance year to year, relative to the district average. Low VA/low attainment schools received students that tested low and those students also grew slower than the district average.

The other criteria for sampling were school levels and types. Schools identified as “Mosaic” were high VA for 4 years and rated high on financial and operative activities and special education compliance measures. Schools identified as National Educational Association (NEA) Focus schools were below the district average in attainment the past 4 years and at least one grade span. See Table 1 for a summary of sample characteristics.

The data was collected at eight schools during normal school-day hours from October 2008–February 2009. One-

Table 1. School characteristics summary

Sampling frame		Schools							
		S1	S2	S3	S4	S5	S6	S7	S8
Performance categories	High VA/High Att	X	X						
	High VA/Low Att			X	X				
	Low VA/High Att					X	X		
	Low VA/Low Att							X	X
School levels	K-5					X	X		
	K-8	X	X	X				X	
	Middle school								X
	High school				X				
School types	Charter school							X	X
	Mosaic school	X	X						
	NEA Focus school			X					

hour, semi-structured interviews were conducted with eight principals and their responses were captured via hand-written notes by the interviewers (first two authors). The notes were electronically transcribed, stripped of identifiers and saved in a password-protected network. The interview guide consisted of global question and probes about the dimensions of data and data use and questions about macroergonomic factors, based on a five-factor work system framework consisting of the individual, organization, tools and technologies, environment, and task (Carayon, 2009).

We observed seven learning team meetings. These were regularly scheduled meetings of school leaders and teachers to plan school-based initiatives, review programs, and analyze data. One low VA/low attainment school declined to be observed. We used the same work system framework to observe macroergonomic factors, types of data used at the school level, and how data analysis was performed in the learning team settings. The observers captured their interviews via handwritten notes and followed the same study procedures taken for the principal interviews.

We performed a content analysis on the data set using QSR NVivo[®], a qualitative analysis software package, to organize the themes and code responses. The thematic coding structure consisted of an *a priori* skeleton structure based on the research questions and five-factor work system framework. One researcher coded the responses and the other performed inter-rater reliability tests by coding transcripts and making cross-case analyses of the categories and coding created by the first researcher. The differences in coding consisted of clarifications in definitions.

RESULTS

The results are reported in two sections: (1) dimensions of data and data use, and (2) human and organizational factors in performance management (See Tables 2 and 3). The high VA/low attainment and the low VA/low attainment columns are shaded to signify that the schools in those categories are

serving similar types of low-attaining students. The high VA/high attainment and low VA/high attainment columns are not shaded to signify that those schools are serving similar high-attaining students. A number 2 referred to two schools who responded at least once to a theme, a 1 referred to one school who responded at least once to a theme, and a dash referred to no response to that theme.

All schools used annual, state administered test scores to assess performance and all but one low VA/low attainment school used VA to assess their performance against attainment. School reactions varied:

- The high VA/high attainment schools viewed VA as a validation because it demonstrated that they grow high-performing students (i.e., the high scores were not the result of a having “good” students).
- The high VA/low attainment schools felt the same, in that VA was a validation of their ability to grow students even though their students’ growth does not meet district standards for attainment.
- Low VA/high attainment schools viewed their VA scores with some disbelief that they were not growing students and were not, in fact, a high-performing school (although they were interested in learning about growth strategies for high attaining students).
- Low VA/low attainment schools believed that students were the problem and did not acknowledge VA scores as a valid measure of student learning.

Schools used data for formative assessments in different ways. Schools across the categories used short-cycle student assessment data for formative feedback on teaching and instruction, with the exception of one low VA/low attainment school. High-performing schools used summative data (e.g., VA, state test, program evaluations) to meet their strategic goals and more granular, short-cycle data sources to meet their short-term curriculum goals. However, high VA/high attainment schools did not emphasize classroom observation data as key data sources, whereas high VA/low attainment schools reported using classroom observations as important measures of classroom instruction.

Schools also varied in the sophistication of their data use. The high VA/high attainment schools used gap analysis to identify mismatches between content areas of the state administered test and current curriculum. One of these schools also used horizontal alignment strategies to ensure consistency in curriculum across grades and vertical alignment strategies to ensure that curriculum necessary for progression in subsequent grades were taught in previous grades.

High- and low-performing schools showed some key differences. The high-performing schools approached data use and school improvement differently than low-performing; for example, high-performing schools articulated a “culture of data use and mindset of student growth” while low-performing schools focused on behavior rather than

Table 2. Dimensions of academic data and data use in high- vs. low-performing schools

Dimensions of data and data use for academic performance		High Performing Schools (4 schools)		Low Performing Schools (4 schools)	
		High VA/High Att 2 schools	High VA/Low Att 2 schools	Low VA/High Att 2 schools	Low VA/Low Att 2 schools
Long-cycle time, summative data	Annual proficiency scores on state test	2	2	2	2
	Value-added score for school year	2	2	2	1
	Program assessment (e.g., reading intervention)	-	1	-	-
Categorical analysis or grouping	Item-level analyses on state test	2	2	2	1
	Grade-level value-added	-	-	2	-
Classroom-level data, instruction	Observation of student engagement	-	2	2	-
	Observation of instruction	1	1	1	-
Short-cycle, formative data	Weekly, bi-weekly, quarterly assessments	2	2	2	1
	Program assessment (e.g., reading intervention)	-	1	-	-
Alignment analysis	Gap analysis of low performance and curriculum	2	-	1	-
	Vertical and horizontal alignment of curriculum	1	-	-	-

Table 3. Human and organizational factors in data use and performance management in high- vs. low-performing schools

Human and organizational factors in performance management			High Performing Schools (4 schools)		Low Performing Schools (4 schools)	
			High VA/High Att 2 schools	High VA/Low Att 2 schools	Low VA/High Att 2 schools	Low VA/Low Att 2 schools
Organization	School Culture	Culture of blaming students	-	-	-	2
		Culture of using data	2	2	2	-
		Student 'growth' approach	2	-	-	-
	Learning team design	Multi-disciplinary team	2	2	2	1
		Interaction with other school teams	2	-	-	-
		Curriculum generalist, program implementer	2	2	2	-
Task and workload	School Improvement Plan (SIP)		2	2	2	1
	Learning team meetings/tasks		2	2	2	2
	Professional development		2	2	2	1
	Collaborative planning time		-	2	-	2
	"Data retreats" (i.e., district-led data seminars/workshops)		1	1	1	1
Technology and tools	School Improvement Plan (SIP)		2	2	2	2
	Data and data use (see Table 2 for summary)		2	2	2	2
Individual	Role of teachers, learning team, leaders in SIP		2	2	2	1
Environment	Inner-city settings, under-served student populations		-	2	-	2
	Student safety concerns, gangs, violence		-	2	-	2

academic performance. The learning teams also differed in performance. High-performing schools emphasized learning team collaboration and representation of various school leaders and teachers. These teams met on a regular basis to discuss and plan for specific goals. Low VA/low attainment schools did not demonstrate this level of focus or team cohesion: Their meeting did not include an agenda, discussion of data or improvement planning, or plans for ongoing meetings and work.

In one learning team session in a high VA/low attainment school, the team struggled to interpret short-term reading assessment data and formulate a coherent strategy. While the principal attended this session, the principal was not the leader of the learning team. Other key school leaders in learning teams were curriculum generalists and program implementers. Curriculum generalists ensured that improvement plans were implemented and program implementers were described as "catch-alls" for providing support for school improvement initiatives on behalf of principals and other school leaders.

Schools used the school improvement plan (SIP), a planning and compliance document that each school must create and submit to the district annually. The SIP was the centerpiece for performance planning. The schools cited some mismatch between the design of the SIP and how they manage

school performance. The SIP was designed and formatted to comply with reporting requirements for district accountability purposes and as such, the plan was long and cumbersome to fill out. Many schools created a shorter version of the SIP that was customized for their schools. These SIP "briefs" were used to guide meetings and monitor progress on improvement initiatives and were more accessible to teachers.

Lastly, the school environment in high VA/low attainment and low VA/low attainment schools experienced inner-city problems and consisted of under-served student populations. These schools served students who, among other characteristics, may not speak English, may have attended a detention facility, belonged to gangs, and engaged in violent behaviors.

DISCUSSION AND CONCLUSION

This exploratory study identified some dimensions of academic data use and human and organizational factors related to school-based performance management. One of the main contributions of this paper highlighted how schools' perceptions of their productivity shape how they plan (or not plan) for performance management. Value-added analysis was one approach to differentiate and define performance because

it provided counterpoints to low-performing schools and redefines “good” performance. High VA/high attaining schools serve as an example that it is possible to grow high attaining students every year. Conversely, high VA/low attaining schools serve an example that all students can learn regardless of their starting point.

Elements of the school work system highlighted some mismatches between tools and technologies and how the work of school-based performance management is carried out by school staff. For example, the school improvement plan and data plans provided by the district did not reflect the flexibility and brevity needed for schools in their weekly performance planning. There were also variances in learning team performance, design, and interaction across the performance categories, which may reflect the misfit between teacher job characteristics and team-based collaboration for school improvement (Somech & Drach-Zahavy, 2007).

Human factors and ergonomics can make contributions to the evolution of performance management at the school level in many ways. First, team-based organizational models need to be adapted and developed for the learning team approach to performance management, and those models need to account for the realities and constraints of teachers’ workload, task/teaching composition, and training developments. Developing organizational and job design methods for teachers and school leaders could also be one way to reconcile the mismatches between teacher job design and collaborative, team-based approaches for school improvement. Second, school leadership approaches could benefit from adopting a top-down, macroergonomic approach and systematizing school functions across the organization. Finally, a human factors approach to communicating productivity metrics, such as VA, could assist in the accurate recognition of school performance (for example, cross-school comparisons, networks of schools with similar student characteristics but which differ on productivity scores). The VA/attainment comparison metric could be one way to differentiate school performance and provide differentiated support to schools based on their performance needs.

This study has several limitations. First, this study consisted of a small sample of schools. The findings are not generalizable, but could be compared to other schools or districts with similar characteristics. Second, the data collection methods included one principal interview and a single observation of a learning team meeting at each school. Future research in this area could expand to include more schools and data collection points with school leaders, and study methods to more fully capture how school-based performance planning is accomplished via interactions among school leaders, teachers, and students.

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