The Intersection between Transformational Leadership and Data Use in Schools

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Paper presented at the 2009 convention of the University Council for Educational Administration, Anaheim, CA.

Copies of this paper are available at http://edadmin.edb.utexas.edu/datause.

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Introduction

The call to reform our public school system has gained increasing attention from the public and policy-makers alike (Schlechty, 2002; Tyack, 1974). Educational leaders and scholars are examining an array of school improvement efforts including such approaches as organizational restructuring, curriculum alignment to state and national standards, and the implementation of instructional and curricular programs. Research suggests that comprehensive reform initiatives are the most effective in realizing improvement in student achievement indicators (Leithwood, Louis, Anderson, & Wahlstrom, 2004; Marzano, Gaddy, & Dean, 2000; Quint, 2008). The literature further emphasizes the key role that campus leaders play in the successful implementation of reform (Hallinger, 2003; Leithwood & Jantzi, 2008; Waters, Marzano, & McNulty, 2003).

Central to the discussion regarding school reform is the policy issue of accountability as articulated in the No Child Left Behind Act (NCLB) (No Child Left Behind Act, 2002). Campus leaders grapple with the complex challenge to implement reform efforts, increase student achievement to meet accountability measures, and serve the needs of their individual students and the community (Goldring & Schuermann, 2009). In order to address this challenge, campus leaders use student achievement data to inform their instructional, operational, and programmatic decisions (Knapp, Swinnerton, Copland, & Monpas, 2006; Schmoker, 2008). Spurred in part by NCLB’s emphasis of student achievement data as an indicator of school quality, the practice of data based decision making has gained momentum and is considered a key factor in the effort to
improve school performance (Copland, 2003; Lachat & Smith, 2005; Supovitz & Klein, 2003; Wayman & Stringfield, 2006).

Recent research that examines the role of the campus principal in the implementation of data use initiatives suggests that leadership is a key factor for success (Copland, 2003; Knapp et al., 2006; Wayman, Brewer, & Stringfield, 2009; Wayman & Stringfield, 2006). More broadly, school effectiveness and reform literature examines a wide range of leadership approaches that contribute to the improvement of school effectiveness and student achievement (Hallinger, 2003; Hallinger & Heck, 1996; Harris & Spillane, 2008; Jackson, 2000; Leithwood, et al., 2004). This body of research has given rise to an array of leadership theories that remain, as Leithwood and Jantzi note (2006), “speculative in nature,” (p. 202).

Bridging the theoretical constructs of leadership theory with the daily practice of data use in the context of educational policy would provide a conceptual lens for data use research and the theory of Transformational Leadership offers promise as theoretical scaffolding (Avolio & Bass; 2004; Burns, 1979; Leithwood & Jantzi, 2006). The model developed by Leithwood and their colleagues should provide a particularly good fit with data use because it focuses on linking specific school leadership practices to school improvement indicators (Leithwood & Jantzi, 2006, Leithwood & Jantzi, 2005).

The goal of this paper is to add to both the leadership and data use research bases by considering the effective use of data through the Transformational Leadership lens. In doing so, we construe “data” broadly – data include formal assessments such as state assessments, but also include other elements such as student demographics and parental information (Wayman, Cho, &
Johnston, 2007; Wayman, Cho, & Shaw, 2009). Accordingly, “data use” is the employment of any of these forms of data to improve educator practice and student achievement.

The paper is presented in four sections. First, we describe the evolution of Transformational Leadership, focusing on the work of Burns, Bass, and Avolio (e.g., Avolio & Bass; 2004; Burns, 1979). Following this, we examine Leithwood and Jantzi’s model of Transformational Leadership, which applies the theory to school settings and examines the effects of specific school practices. Next, we review the body of research examining data use, delineating the linkages between Leithwood’s Transformational Leadership model and effective data use practices. We conclude by presenting a preliminary conceptual framework of how the model and data use intersect.

**Transformational Leadership**

Burns’s (1979) theory of Transformational Leadership is founded on the notion that conditions of injustice spark the need for social change (Burns, 1979). In his book *Leadership* (1979) Burns lays out a theory involving juxtaposed leadership styles: Transactional and Transformational. Transactional Leadership is typified by behaviors that are often considered managerial and based on notions of “bargaining.” Transactional leaders focus on the implementation of policies and the operational aspects of the organization and use extrinsic rewards to motivate followers to act. In other words, leadership entails acts of transaction. Burns (1979) maintains “These transactions consist of mutual support and mutual promises, expectations, obligations, rewards;” (p. 298). Leaders motivate followers to act based on the contractual agreement of exchange and assume that followers will act in order to gain the promised reward. Burns believes that Transactional Leadership flourishes in bureaucratic
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systems which clearly define roles and rewards (Burns, 1979). Transactional Leadership is similar to more current leadership models such as Contingent Reward, or Management by Expectation (Bass, 1990; Stewart, 2006).

Transformational Leadership, conversely, is characterized by behaviors that are geared toward relational aspects of the organization. Transformational leaders intrinsically motivate followers to function as a collective to achieve a common aim (Burns, 1979). It is critical that the shared goal is inherently an ethical aim for social change and justice, anchored in the moral commitment to bring about social reform (Burns, 1979). The means do not justify the ends; transforming leaders are “burdened” with an ethical imperative to act morally (p. 202).

The ultimate result of transforming leadership is a relationship based on mutual needs, aspirations, and values. This relationship elevates the followers to leaders in their own right and leaders into moral agents. Burns emphasizes that transforming leadership is responsive to the needs of the followers: “Moral leadership emerges from, and always returns to, the fundamental wants and needs, aspirations, and values of the followers. I mean the kind of leadership that can produce social change that will satisfy followers’ authentic needs” (p. 4). Burns’s conception of Transformation Leadership is based on the reciprocal relationship between the leader and follower who share the commitment to realize a common ethical purpose.

Bass and Avolio build on the earlier work of Burns, arguing that effective leaders display both Transformational and Transformational characteristics (Avolio & Bass, 2004; Bass, 1990, 1995). Bass and Avolio believe that Transactional Leadership targets first order effects, but Transformational Leadership is aimed at achieving higher order effects. As Avolio and Bass (2004) state:
The first order of change—change of degree—can be handled adequately by the current emphasis on leadership as an exchange process, a transactional relationship in which individuals' needs are met if their performance measures up to their contracts with their leader. But a higher order of change calls for something distinctly different; it is represented in the perspective shifts often associated with transformational leadership. Transformational leadership can be thought of as a higher-order exchange process: not a simple transaction, but rather a fundamental shift in orientation, with both long and short term implications for development and performance, (p. 20).

For Bass and Avolio, Transformational and Transactional approaches are required to maximize organizational potential (Avolio, Bass, & Jung, 1999; Bass, 1990). Extensive research suggests that Transactional Leadership is most effective when augmented by Transformational Leadership practices (Bass, 2005; Hallinger, 2003; Leithwood, Harris, & Hopkins, 2008; Leithwood & Jantzi, 2005a; Yukl, 1999). Bass and Avolio see the leadership styles as complimentary rather than dichotomous and have gone so far as to develop measurements for this augmentation effect (Avolio & Bass, 2004; Stewart, 2006).

*Leithwood and Colleague’s Model of Transformational Leadership*

This model of Transformational Leadership provides a set of leadership practices that are linked to the key elements of Burns’s theory and builds on the work of Bass and Avolio. Specifically, Leithwood and Jantzi focus on leadership practices that are specific to schools (Leithwood & Jantzi, 2005a) so it offers a compelling framework for examining data use practices and leadership. The model centers on four categories of leadership practices: 1) Setting Directions, 2) Developing People, 3) Redesigning the Organization, and 4) Managing Instructional Programs (Leithwood & Jantzi, 2005a). In broad terms, the first three categories encompass the fundamental principles of Transformational Leadership. The fourth category
accounts for Transactional Leadership approaches, added as a response to criticisms regarding the model’s initial emphasis on solely Transformational Leadership practices (Leithwood & Jantzi, 2005a). These three Transformational Leadership categories describe a set of “school specific” Transformational Leadership Behaviors (TLB’s) while the Transactional Leadership category encompasses more managerial dimensions of school leadership (Leithwood & Jantzi, 2005a). Because our discussion is focused on Transformational Leadership, we focus here on the first three categories.

In a series of studies implemented from the 1990’s to 2006, Leithwood and colleagues examine the effect of Transformational Leadership on the outcomes of organizational conditions and student achievement (Leithwood & Jantzi, 2000; Leithwood & Jantzi, 2006; Leithwood, et al., 2004; Leithwood, Steinbach, & Jantzi, 2002, Leithwood & Jantzi, 1990). These studies focus on the effect of leadership leadership behaviors. Leithwood et al. (1996) offer the following framework for viewing the research, as represented in Figure 1 (Leithwood, et al., 1996).

**Figure 1:**
*A Framework for Guiding The Review of Research on Transformational School leadership*
In order to measure the leadership effects, Leithwood and Jantzi (1999) examine the relationship between TLBs on Organizational and Student Outcomes (Leithwood & Jantzi, 2005; Leithwood, et al., 1999). Antecedents to leadership are not emphasized in early studies, which focus instead on the effect of leadership practices (Leithwood & Jantzi, 2000; Leithwood, et al., 1999).

Early research showed that TLBs are positively correlated to organizational outcomes that are indirectly linked to student learning while the direct effect of transformational leadership on student outcomes is weak (Leithwood & Jantzi, 2000). Later studies built on these findings (Leithwood & Jantzi, 2005a) and consider the mediating leadership practices that most affect the school conditions directly related to student learning (Leithwood & Jantzi, 2006; Leithwood & Jantzi, 2008; Leithwood, et al., 2004). Leithwood and Jantzi (1999) note: “Because the largest proportion of school leadership effects on students are mediated by school conditions, a significant challenge for leadership research is to identify those alterable conditions likely to have direct effects on students and to inquire about the nature and strength of the relationship between them and leadership,” (p. 455). The consideration of the intersection between TLBs and data use practices is one step in addressing the challenge.

In order to illuminate this intersection between the model of Transformational Leadership and Data Use, the three categories of TLBs are explored in more detail below. Leithwood & Jantzi (2005b) caution that the dimensions are “no where detailed enough to be ‘prescriptions,”’ (p. 38). School context greatly influences appropriate strategies for implementation of Transformational Leadership practices. In addition, Leithwood and Jantzi present from six to nine dimensions of TLBs in their work (Leithwood & Jantzi, 1999, Leithwood & Jantzi, 2005a,
Leithwood & Jantzi, 2006). For the purposes of this paper, the nine dimensions of the model outlined in the 2006 study will be examined.

Setting Directions. Leithwood and colleagues’ first TLB category, Setting Directions, encompasses the leadership practices that entail articulating a common vision, setting group goals, and setting expectations for high performance. In doing so, the authors note three dimensions: shared vision, collaborative goal-setting, and collaborative priority-setting. The notion builds upon the understanding that followers are more likely to act when unified by a compelling purpose that meets both organizational and personal goals (Leithwood & Jantzi, 2005b). The authors note: “A critical aspect of transformational leadership is helping staff to develop shared understandings about the school and its activities as well as the goals that undergird a sense of purpose of vision,” (p. 38).

An array of processes that promote shared vision and collaborative priority setting have been studied relative to the notion of transformative leadership. While the processes vary according to school context, there are important commonalities (Leithwood, Begley & Cous, 1994). For example, transformational leaders who address the need to “clarify and prioritize a set of shared goals” and who involve a wide range of faculty and staff members enhance school improvement efforts (p. 144). Transformative leaders clearly communicate purposeful goals and priorities that faculty members embrace as personally meaningful (Leithwood et al., 1994). The processes for determining the goals, priorities, and plans contribute to the school conditions that promote effective school improvement efforts (Leithwood et al., 1994). The literature suggests that collaborative processes that are inclusive, balance district and campus needs, and based on shared values are more effective in improving school conditions (Leithwood & Jantzi, 2006,
Leithwood et al., 1994). Furthermore, these transformative processes account for potential conflicts and include methods, as Leithwood et al. (1994) state to “block competing priorities and systemically orient new staff to the goals for school improvement” (p. 143). Finally, the authors suggest that processes which distribute authority and power while developing the shared vision, goals, plans, and expectations are more effective relative to higher order change efforts (Leithwood et al. 1994, Leithwood & Jantzi, 1990).

*Developing People.* Addressing both the intellectual and emotional capacity of the teachers, Transformational Leadership entails the purposeful development of the faculty and staff’s capacity to reach the intended, stated, and shared goals through the second category of the model, *Developing People* (Leithwood & Jantzi, 2005b). Leithwood and Jantzi (2006) delineated the dimensions of this category as providing intellectual stimulation, offering individualized support, and modeling desirable professional practices and values. The personal attention of the principal to the teacher regarding his/her growth and development increases motivation, efficacy, and commitment to improve instructional practices (Leithwood and Jantzi, 2006). The authors indicate that campus principals who are “actively involved” in staff development activities are more effective at fostering teachers’ capacity (Leithwood et al., 1994, p. 147). For example, the principal might be engaged in leading “workshops to staff in areas of their expertise, assisting teachers in their own classrooms, attending inservice with staff, and sharing information….” (p. 147). TLBs related to the second category are geared toward empowering teachers’ ability to problem-solve and attend to the individual teacher’s personal needs (Leithwood & Jantzi, 2005b).
To continue, transforming principals attend to a teachers’ stage of professional development in delivering individualized intellectual stimulation and support (Leithwood & Jantzi, 2005b). The principal’s direct involvement in providing intellectual stimulation and individualized support also provides opportunities for modeling the desired practices. Furthermore, the literature emphasizes that the principal likewise promotes collaborative opportunities for capacity building by promoting “collective” capacity (Leithwood et al., 1994). Transformative practices empower teachers to provide intellectual stimulation in a collegial climate (Leithwood et al., 1994). For example, teachers are encouraged to try new instructional techniques in their classrooms, reflect on their practice, and share experiences (Leithwood et al., 1994). These practices are enhanced through the structures and systems embedded in the organizational design, highlighted specifically in the third category discussed below.

Redesigning the Organization. The model accounts for leadership practices that are geared toward attaining second order change effects through the establishment of organizational routines, systems, and structures that enhance collaborative culture and collective learning (Leithwood & Jantzi, 2005b; Leithwood and Jantzi, 1990). Leithwood and Jantzi (2006) present the dimensions of Redesigning The Organization as developing a collaborative school culture, creating structures to foster participation in school decisions, and creating productive community relationships. The leader promotes organizational systems and structures that allow for the “ongoing refinement” of administrative operations in order to foster continuous improvement efforts. For example, the Leithwood et al. (1994) note effective leaders build collaborative structures that 1) provide teachers the frequent and routine time and opportunities to share specific teaching techniques, 2) provide teachers with ongoing classroom observations and
feedback, and 3) incorporate collaborative planning and evaluation time for instructional lessons (Leithwood et al., 1994).

Additionally, the authors suggest that the use of symbols and rituals are effective strategies employed to foster a collaborative culture (Leithwood & Jantzi, 2005b; Leithwood & Jantzi, 1990). For example, publically “celebrating successes” at staff or “writing personal notes” to teachers relative to attaining short and long terms goals toward the improvement efforts meetings are cited by Leithwood et al. (1994) as “rituals” and “symbols” that build collaborative culture (p. 149). Furthermore, broadly delegating power and authority throughout a range of stakeholders while developing their leadership capacity enhances the transformation of the school into a learning organization (Leithwood & Jantzi, 2006; Leithwood & Jantzi, 2005b; Leithwood et al, 1994).

Leithwood et al. (1994) indicate that transformational leadership is an effective approach for schools facing significant challenges. The effects of the TLBs are most significantly related to the improvement of school conditions and organizational outcomes, thereby indirectly effecting student achievement. The discussion above explored more specific and detailed leadership practices associated with the three categories of TLBs presented in the model. It is worthwhile to note that leaders who effectively promote collaborative cultures, the essence of Redesigning the Organization, implement transformational strategies that can vary widely and can serve what Leithwood et al. term “multiple purposes,” (147).

**Transformational Leadership and Data Use**

Leithwood and colleagues have discussed use of student data in research that accounts for the influence of educational policy on leadership practices (Leithwood & Jantzi, 2006;
Leithwood, et al., 2004; Leithwood, et al., 2002). Leithwood and Jantzi (2006) consider the context of educational reform policy as “large scale efforts initiated by those in government to improve local schooling,” (p. 202). Campus leadership plays a key role in the effective implementation of reform policy since campus leadership has a direct effect on school conditions, (Leithwood & Jantzi, 2008; Leithwood, et al., 2004). As Letihwood et al. (2004) write,

The chance of any reform improving student learning is remote unless district and school leadership agree with its purposes and appreciate what is required to make it work. Local leadership must also, for example, be able to help their colleagues understand how the externally-initiated reform might be integrated into local improvement efforts, provide the necessary supports for those whose practices must change and win the cooperation and support of parents and others in the local community, (p. 2).

Leithwood et al. (2004) note that the collaborative use of data-informed decision making in regards to planning for the implementation of school improvements efforts, is a key component of effective leadership (Leithwood, et al., 2004). This parallels findings in data use research which examines the collaborative use of data to inform instructional decisions (Copland, 2003a; Knapp, et al., 2006; Supovitz & Klein, 2003). Leithwood et al. (2002) broadly view the collaborative use of information relative to strategic planning for improvement as an organizational outcome. For example, teacher commitment to the implementation of accountability policy reform initiatives were examined in relation to the model, indicating that Transformational Leadership has a positive correlation to teacher motivation and commitment to implement improvement strategies mandated by policy (Leithwood, et al., 2002).
As demonstrated above, Leithwood and colleagues take into account the leadership practice of data use relative to the implementation of reform policy, but the specific leadership practices considered in their studies cast a broad net regarding how leaders use data to effect school conditions. Leithwood et al. (2004) acknowledge this limitation, encouraging future research relative to the implementation of school reform policies and data use.

These efforts will be increasingly productive as research provides us with more robust understandings of how successful leaders make sense of and productively respond to both external policy initiatives and local needs and priorities. Such efforts will also benefit considerably from more fine-grained understandings than we currently have of successful leadership practices; and much richer appreciations of how those practices seep into the fabric of the education system, improving its overall quality and substantially adding value to our students’ learning, (p. 9).

Leithwood et al (2004) invite the extension of the research in light of current reform policies. A full examination of the categories of Leithwood and his colleagues’ model in terms of the effective data use practices offers promise in revealing finer grains of leadership strategies. By reviewing the body of data use literature through the theoretical lens offered by Leithwood and colleagues’ model, data use practices can be linked to the specific TLBs considered in the theory. In the following sections, we offer these linkages for each of the model’s three categories.

**Links Between Setting Directions and Data Use**

As discussed above, *Setting Directions* includes such leadership dimensions as creating a shared vision. For Leithwood, it is essential that the leader involve all members of the learning community in the process of building the vision and articulating goals (Leithwood, Begley, & Cous, 1994). This element of shared vision-building is also strong current in the data use
research literature. In order for schools and districts to engage in effective data use to inform instructional and programmatic decisions, stakeholders must embrace the vision and the common goals which underlie the work of data use (Copland, 2003; Knapp, et al., 2006; Supovitz & Klein, 2003; Wayman, et al., 2007). Further, it has been suggested that engaging stakeholders in the process of building shared vision is thought to ensure that the work of using data to guide, inform and improve instructional practices with the aim of improving all students’ academic performance increases successful implementation of effective data use initiatives (Wayman, et al., 2007).

Inclusive participation in developing a shared vision entails clearly defining both the goals of the organization as well as the concepts that undergird the work. Wayman et al. (2007) emphasize the importance of developing a shared vision as an integral component to establishing a systemic, district-wide reform relative to data use. A “data-informed district” that has engaged in an inclusive visioning process enables the members of the organization to share understandings and meanings relative to fundamental concepts such as teaching and learning, how to use data to improve teaching and learning, and how that work aligns with the district vision of data use (Wayman, et al., 2007). In order to galvanize the organization around a clear purpose, stakeholders must share the same understandings of the practices that propel the work. Relative to data use, this requires leadership to engage the stakeholders in collaborative dialogue to explore fundamental elements of the work of the district or school. Wayman et al. (2007, p. 41) describe this process as “calibration,” saying, “Similar to how a mechanic might calibrate the numerous working parts of an engine to create synchronous efficiency, so must district personnel and entities commit to a calibration process to define education and how data support education.”
The literature suggests that leaders, teachers, and stakeholders hold widely different understandings of such key concepts as teaching and learning, and assessment (Black & Wiliam, 1998; Chappuis & Chappuis, 2008, Ingram et al., 2004). For example, the literature suggests that there are a wide array of definitions of types of assessments and how to use the measurements to inform instructional decisions. Indeed, teachers and administrators are often confused regarding the fundamental instructional concepts of “summative” and “formative” assessment (Perie, Marion, & Gong, 2007). The process of “calibration” around such key issues affords the leader opportunities for the campus community to approach a shared understanding of such concepts while articulating the shared aim and purpose of the organization.

Additionally, in their examination of data use and leadership, Knapp et al (2006) establish the importance of the core beliefs and attitudes that effective leaders employ as strong and informed users of data. Referencing the work of both Fullan and Sergiovanni, the authors examine the “moral dimensions of leadership” relative to such notions as the “ultimate purpose of schooling, principles of equity, and the justification for leadership strategies of all kinds,” (Knapp, et al., 2006, p. 12). In arguing that effective educational leaders inherently embrace the value of “inquiry” and data use, the authors postulate that leaders operate from assumptions relative to “implicit” assumptions about “good teaching and learning” as well as “theories of change,” (Knapp, et al., 2006, p. 12). The process of “visioning” and “calibration” described above can surface these assumptions, core values, beliefs, and “theories of action” that drive a leader’s decision-making and lead to dialogue geared toward the public articulation of the shared vision critical to Transformational Leadership. This process clearly aligns to the strong undercurrent of moral leadership apparent in Bass and Avolio’s work who state that
“Inspirational leaders articulate, in simple ways, shared goals and mutual understanding of what is right and important. They provide visions of what is possible and how to attain them. They enhance meaning and promote positive expectations about what needs to be done” (Avolio & Bass, 2004, p. 28).

Visioning, as seen in Copland’s (2003) work, examines a comprehensive reform effort that implemented concepts fundamental to Transformational Leadership and initiated structures and practices requiring teachers to work collaboratively to analyze data in a well defined “Cycle of Inquiry” (Copland, 2003). In the Copland (2003) study, the vision included both the ultimate goal, to close the achievement gap, but also the process, to analyze data collaboratively in shared decision-making. Not only does the organizational goal embrace the key element of an ethical dimension, but also the understandings of the concepts and processes used to meet the goal are thereby shared across the faculty. Most importantly, the literature suggests that the development of a strong shared vision might increase the likelihood that the data use reform is sustained beyond the tenure of the current leadership, a critical component to effective school improvement efforts (Copland, 2003; Wayman et al., 2007).

Other dimensions of Setting Directions include collaborative goal and priority planning (Leithwood & Jantzi, 2006). In the model, the process of developing goals, priorities, and plans is an inclusive act in which all members of the campus community are involved and given voice. Research on effective data use suggests that clearly defining goals and articulating plans of action are an essential component of successful data or evidence use practices (Copland, 2003; Honig & Coburn, 2008; Supovitz & Klein, 2003). Effective data use practices may incorporate the use of student test data to set campus-wide improvement goals (Knapp et al, 2006). While
developing school improvement plans based on test scores is commonly the function of district and campus leadership, the literature suggests that implementing more collaborative processes in planning and goal setting is more effective. Additionally, incorporating a more diverse range of data, such as student demographics, formative assessments and teacher perceptions, allows the establishment of goals that are not only more accurate and attainable but also more easily monitored (Knapp et al., 2006; Wayman & Stringfield, 2006).

Supovitz and Klein (2003) present the way that data is used in the development of campus-wide goals and improvement plans. The study indicates that campus leaders used results from state-wide standardized tests to set improvement goals; however, the authors point out that several of the campus leaders made an intentional effort to seek out teachers’ input so as to further develop and articulate not just the campus goals, but individual student goals as well. This is consistent with other data use literature indicating that administrators who engage in collaborative efforts with teachers to articulate a common vision, share understandings of the concepts of teaching and learning; and explore and define the use of assessments and data are engaging more effective data use practices (Copland, 2003; Wayman & Stringfield, 2006; Wayman, Brewer, & Stringfield, 2009). These leaders also struggled with the limitations imposed by one set of data, finding that including teacher input and multiple data sources led to more effective learning goals for the campus as well as the students.

*Links Between Developing People and Data Use*

The second broad category of Leithwood and colleagues’ model is *Developing People*. As discussed, this category includes dimensions of providing intellectual stimulation, offering individualized support, and modeling desirable professional practices and values. (Leithwood &
Jantzi, 2006). The model operates from the framework that teachers and staff are intrinsically motivated to implement instructional practices not only because of their shared commitment to the attaining the collective goal, but also because of the leaders’ supportive capacity building. Transformational leaders engage in activities that are geared to nurturing and cultivating the followers rather than managing the implementation of instructional programs. As Hallinger comments, “the principal’s efforts become apparent in the school conditions that produce changes in people rather than in promoting specific instructional practices” (Hallinger, 2003, p. 339). For Avolio and Bass, this category encompasses the notion that followers are encouraged to question their own assumptions and beliefs as well as the leader’s (Avolio & Bass, 2004). The literature examining the best practices of campus-wide data use initiatives reveals examples of leadership that fall in this category (Copland, 2003; Knapp, et al., 2006; Lachat & Smith, 2005; Wayman & Stringfield, 2006; Wayman, Brewer, & Stringfield, 2009).

For example, the concept of a Cycle of Inquiry is a recurring theme in the literature examining effective data use, and can be considered as a practice that reflects the “intellectual stimulation” component of Transformational Leadership. The Cycle of Inquiry is described in the literature as a powerful method to engage the school campus in formal collaborative and ongoing examination of data (Copland, 2003; Knapp, et al., 2006; Supovitz & Klein, 2003). Teachers meet regularly to examine student individual and group data, pose questions, share instructional strategies, and plan interventions (Black & Wiliam, 1998; Wayman, et al., 2007). Leaders who effectively implement data use initiatives through a Cycle of Inquiry create the conditions that spark intellectual stimulation and the teachers’ intrinsic motivation to use data effectively to improve classroom instruction. The Cycle of Inquiry promotes the reflective
examination of instructional practices emphasized in the model of Transformational Leadership discussed above. In addition, the collaborative nature of the Cycle of Inquiry which regularly brings teachers together to discuss and examine teaching and learning relative to student data promotes the collective capacity building presented in the category *Developing People*.

Data use initiatives can promote the development of professional learning communities and communities of practice, which reflect this dimension of the leadership model. As teachers develop expertise in data use and assume leadership roles with their peers in the collaborative process, their sense of efficacy increases; the practice empowers teachers as they realize their actions affect and influence change. For example, in the Wayman and Stringfield (2006) study of schools that were successfully implementing campus wide data use initiatives, administrators and teachers reported “an increased sense of professionalism” and a “feeling of pride” (Wayman & Stringfield, 2006, p. 562). This finding suggests that the targeted and intentional implementation of a data use initiative that is coupled with practices of collaborative inquiry speaks to the key dimension of “intellectual stimulation” in the Transformational Leadership model: Teachers are stimulated to higher levels of professional practice, empowered by their new skills, and therefore intrinsically motivated to persist in implementation and increase their leadership influence.

Leithwood et al. (2005) note that intellectual and collaborative stimulation provide teachers with the learning opportunities to develop a repertoire of instructional strategies (Leithwood et al., 2005). Key to the development is the notion of reflective practice which is fostered through collaborative dialogue with colleagues (Leithwood et al., 2005). Teachers become skilled at determining which strategies to implement given different classroom conditions as they share
information with each other. The ability to effectively use data enhances their effective implementation of their instructional repertoire.

It is important to note that easily-accessed, accurate data must be easily accessible for the teacher; otherwise, data use can be viewed as a barrier to improve practice rather than an impetus (Brunner et al., 2005; Wayman, et al., 2007; Wayman, Cho, & Shaw, 2009; Wayman, Stringfield, & Yakimowski, 2004). Rather than providing “intellectual stimulation,” the research suggests that cumbersome access frustrates teachers. Data use is then viewed as an extra additive duty rather than a stimulus for improved practice (Copland, 2003, Wayman, et al., 2007). It is essential that the structures that promote a teacher’s ability to easily access a wide range of accurate data, collaborate in data analysis, and share in instructional decision-making are established if data use is going to foster “intellectual stimulation,” build teacher capacity, and be an effective tool in transforming schools into cultures of inquiry. This crucial component will be explored more fully in the discussion of the third category of Transformational Leadership.

Individualized support is also a key element of the second category. Described by Avolio and Bass (2004) as “Individualized Consideration,” this leadership behavior prioritizes the needs of the followers to supportively build capacity and “develop their full potential” (Avolio & Bass, 2004, p. 29). Data use research indicates that collaborative data analysis must be considered a safe practice for teachers, what Wayman and Stringfield (2006) call “non-threatening triangulation.”. This non-punitive approach individually supports teachers and thereby encourages them to ask questions that are generated from multiple data sources. This climate of safety and personalization is increased in that “teacher judgment” is included as a critical data point.
Furthermore, the literature is clear that professional development both in the understanding of data use as well as in the technical skills required to access data is critical for teachers to be effective in data analysis (Knapp, et al., 2006; Perie, Marion, & Gong, 2007; Wayman, et al., 2007). Professional development assumes a wide variety of manifestations in relation to data use. Research indicates that teachers first need extensive professional development in understanding the nature and valid uses of measurements and assessments (Black & Wiliam, 1998; Perie, et al., 2007). Teachers also need training in the technical demands of the systems (Perie, et al., 2007; Wayman et al., 2004). Finally, teachers will need training in methods of collaboration and inquiry and support in assuming their new roles as leaders (Copland, 2003). Extensive and targeted professional development in data use is an example of the “individual support” that is emphasized in the Transformational Leadership model.

Lastly, a key component of the second category of the Transformational Leadership model is modeling. In this component, the authors supposed that leaders serve by example, engaging themselves in the expected professional practices (Avolio & Bass, 2004; Hallinger, 2003; Leithwood & Jantzi, 2006). Leaders must engage in building their own capacity as data-informed decision makers as well as in practices inherent to collaborative leadership and inquiry. Relative to data use, this suggests that campus leadership engages in data-informed decision making collaboratively with the teachers, modeling the practice while simultaneously building the teachers’ leadership capacity through a shared process (Copland, 2003; Knapp, et al., 2006, Ronka, et al., 2008). Wayman and Stringfield (2006), in their study of three schools implementing faculty-wide data initiatives, suggest that the role of the principal was critical to the effort. This notion of leadership expertise and modeling is also discussed in Copland’s (2003)
study. He concludes that campus leaders are the “catalyst” for change citing one principal who stated, “There’s no substitute for the principal of a school showing that this is what matters…,” (Copland, 2003, p. 388).

Leithwood and his colleagues maintain that the modeling aspect of Transformational Leadership results in increased teacher efficacy and is a key component for effectively implementing school improvement efforts (Leithwood, Harris, & Hopkins, 2008). Avolio and Bass likewise assert that Transformational Leaders “set examples” while providing “coaching and mentoring” (Avolio & Bass, 2004). The literature relative to data use supports this observation (Knapp, et al., 2006; Supovitz & Klein, 2003; Wayman & Stringfield, 2006).

Apparent in the literature regarding leadership and data use is a note of caution, however. While effective data use initiatives are tied to strong leadership, the model of “heroic” leadership renders the initiative vulnerable to failure when the reins of leadership change hands (Copland, 2003; Wayman, et al., 2007; Wayman, Conoly, Gasko, & Stringfield, 2008). The final category of Transformational Leadership described below addresses this vulnerability and is critical to the sustainability of an effective data use school improvement initiative.

*Links Between Redesigning the Organization and Data Use*

The third category, *Redesigning the Organization*, emphasizes the building of a collaborative culture through establishing structures that support ongoing collaboration and shared decision-making. Having developed a common vision and priorities through *Setting Directions* and having provided individual and modeling practice through *Developing People*, the transformational leader focuses on cementing the structures and practices critical to sustaining continuous improvement practices of the learning community. By laying a solid
foundation through the establishment of structures and practices of a learning organization, the culture of the organization shifts and the organization transforms. The third category presents the structural conditions that must be established and maintained in order to foster and promote “collective problem solving.” Consequently, the barriers to ongoing improvement efforts through collaborative practices are removed (Leithwood, Begley, & Cous, 1994). Avolio and Bass call this the “cascading effect,” (Avolio & Bass, 2004, p. 29). The combined influence of the factors of Transformational Leadership result in the development of the followers own leadership capabilities and the ability of followers to be creative and “tackle and solve problems on their own…” (Avolio & Bass, 2004). Leithwood and colleagues categorize dimensions of this category as systems, capacity, and learning community

Research relative to data use also finds that effective data use initiatives are supported through the establishment of organizational structures that promote shared inquiry. For instance, an overarching theme is that effective implementation of a data initiative is contingent on the collaborative interrogation, inquiry, and analysis of data that leads to instructional changes and interventions (Copland, 2003; Knapp, et al., 2006; Wayman & Stringfield, 2006). Time should be provided for educators to engage collectively in school-wide conversations regarding the analysis data, exploration of instructional interventions, and incorporate changes in practice (Copland, 2003; Honig & Coburn, 2008; Knapp, et al., 2006; Wayman, Brewer, & Stringfield, 2009; Wayman, et al., 2007;). Furthermore, time for collaboration must be formalized and ongoing, incorporated as part of the work day for teachers and leaders (Wayman, Brewer, & Stringfield, 2009; Wayman, et al., 2007).
In order to promote the linkage between data use and instructional improvement efforts, data-informed dialogue must be guided by language and procedures that cultivate productive inquiry, analysis, and action. The common understandings of teaching and learning articulated in the visioning phase of data use initiatives can serve as the basis for protocols and thus mirror elements of this third category. Furthermore, in order for data analysis to be most effective, the purposefulness of different types of data to inform instructional decisions must be clearly defined and incorporated into protocol structures (Black & Wiliam, 1998; Perie, et al., 2007). Finally, non-threatening procedures that systemically propel the level of inquiry must be established. Teachers and staff must feel safe to examine the data and not fear reprisal for what it might show (Copland, 2003; Wayman & Stringfield, 2006). Data use initiatives and efforts that fail to implement safe time and safe-havens for inquiry may be truncated and thereby fail to realize the organizational shift necessary in effective Transformational Leadership.

The literature offers examples of teachers who are inundated with data and resistant to data-use initiatives (Copland, 2003; Valli & Buese, 2007; Wayman, et al., 2007). Ongoing professional development must be embedded as a structural norm so that teachers are continuously developing their expertise regarding assessments, data, and data-use (Black & Wiliam, 1998; Copland, 2003). In addition, ongoing training and support must be provided either internally or externally so that teachers and campus leaders are efficient, skilled, and knowledgeable in the use of the data-system (Honig & Coburn, 2008; Perie, et al., 2007; Wayman, Stringfield, & Yakimowski, 2004).

Finally, of the most fundamental structural issues relative to data-use is the technical system that is employed by the campus and/or district. Wayman et al. (2004) offer some of the
following features of a sound data-system: user-friendliness; drill-down capacity; information access; and data accuracy (Wayman, Stringfield, & Yakimowski, 2004). Most significantly, research indicates that inaccurate data and cumbersome systems can hamper effective data use (Copland, 2003). Implementing an effective data use technology system and providing teachers with easy access and accurate data serves an example of a structural change that empowers teachers to independently solve problems. Wayman and Stringfield (2006) suggest that providing effective technology systems supports the systemic use of effective campus wide data use. While many of these practices have been discussed above in as components of Setting Directions and Developing People, the third category, Redesigning the Organization, encompasses the notion of fundamental shifts in norms and practices that are reflective of the cultural transformation that solidifies the school improvement practices and efforts.

**Preliminary Framework for Transformational Leadership and Data Use**

The analysis of the Leithwood’s model of Transformational Leadership offers a promising linkage between leadership theory and data use research. The model of Transformational Leadership is enhanced by the intersection of Leithwood’s TLB’s to specific data use practices. Concurrently, data use research is enriched by the complementary leadership theory framing the data use practices. Figure 2 illustrates the conceptual framework emerging from the discussion. The three dimensions of Transformational Leadership Behaviors comprise the initial level of the framework. Specific leadership behaviors as examined by Leithwood and colleagues align with the three initial categories. These specific dimensions correspond to the data use practices that are predominant in current literature.
Figure 2

Transformational Leadership and Data Use

- Shared Vision and Values
  - Data-Driven District Visioning
    - Collaboration
      - Beliefs, Values, Attitudes
      - Campus-wide Improvement Goals
      - Individual Student Goals
    - Teacher Input
      - Multiple Data Sources
      - Reflective Collaborative Questioning
      - Accurate and Accessible Data
      - Appropriate Use of Assessments and Judgments
      - Ongoing Technical Training
      - Principals Share Data Use Expertise
      - Principals Model Effective Data Use
    - Systematic Planning
      - Time for Planned Collaboration
      - Protocol for Collaboration
      - Distributed Leadership
      - Supportive Technology
      - Norms and Structures for Data Use
      - Stakeholder Collaborative to Solve Problems
  - Collaborative Goal Setting
    - Collaborative Planning
    - Key Account Setting
  - Collaborative Focus Setting
    - Cycles of Inquiry
    - Accurate and Accessible Data
  - Transformative Leadership Behaviors
    - Developing People
      - Individual Support
      - Staff Development
      - Principal Commitment
      - Principals Model Effective Data Use
    - Modeling
      - Time for Planned Collaboration
      - Protocol for Collaboration
      - Distributed Leadership
      - Supportive Technology
      - Norms and Structures for Data Use
      - Stakeholder Collaborative to Solve Problems
    - Redesigning the Organization
      - Data Driven Culture
      - Transformational Learning Community
Figure 2 presents the specific data use practices framed by the concepts fundamental to Transformational leadership. The Setting Directions Category outlines three dimensions of leadership behaviors, Shared Vision, Collaborative Goal Setting and, Collaborative Priority Setting. These dimensions align to the three data use practices, Visioning, Goal Setting, and Planning as well as specific behaviors associated with effective data use leadership practices. The Developing People Category demarcates the second dimension of Transformational Leadership Behaviors, Intellectual Stimulation, Developing People, and Modeling. These behaviors parallel elements of effective data use practices reflected in the Cycle of Inquiry, Professional Development, and Principal Commitment. The third category, Redesigning the Organization, encompasses the dimensions of Building Systems, Creating Capacity, and Transforming the Organization, and is congruent with the data use practices of providing the Systemic Support of data use, such as time and protocols for collaboration, ensuring Ongoing Training to sustain data use practices, and ultimately the development of a Data Driven Culture on a campus.

The rudiments of the intersection between Transformational Leadership and Data use as displayed in Figure 2 offer a compelling framework worthy of further examination. We view this framework as unfinished business. Our framework only represents the early stages of our thinking on this topic and we expect it to change as we conduct more research and solicit feedback. In the following section, we outline our preliminary thinking about the implications that viewing data use through the Transformational Leadership lens might present.
Implications

The framework presented above provokes important questions for practice: What behaviors would a “Transformational Data Use Leader” exemplify? Would the effect of “Transformational Data Use Behavior” increase the school improvement efforts geared toward enhancing school conditions, classroom conditions, and student achievement? We offer the following discussion regarding our preliminary ideas on how the framework can potentially impact leadership practices; future research will provide more detail.

First, a Transformational Data Use Leader could purposefully set out to use a wide range of student data to generate a common vision through a calibration process encouraging teachers and stakeholders to engage in deep discussions regarding what is meant by teaching, learning, and assessments. Through this data based visioning process, it is hoped that core values, beliefs and attitudes would surface. We interpret both bodies of literature to suggest that, although coming to agreement is important, the granularity of agreement is less important. In other words, it may not matter exactly what everyone agrees on, but that they agree on something. In this way, the process foregrounds dialogue. Better granularity may be realized through regularly-scheduled manifestations of this process (Wayman & Cho, 2008).

Additionally, planning priorities and expectation based again on a wide range of data, could be developed through school improvement teams. These plans, priorities and expectations would target campus wide improvement efforts as well as individual student results. Data use would support in both the development of the plan as well as the ongoing monitoring and adjustment of goals and expectations as suggested and collaboratively agreed upon by faculty members.
Second, the Framework suggests that a Transformational Data Use Leader might set out to build capacity on his/her faculty by using collaborative structures to initiate questions regarding teaching and learning based on a wide range of appropriate assessments. Fostering a Cycle of Inquiry, teachers would be individually and collectively stimulated to query the data and their own instructional practices in routine data meetings with faculty members, instructional coaches, and the principal, experiencing an increased sense of self-efficacy and communal professionalism. Leadership would individually support teachers through appropriate staff development opportunities meeting each teacher’s skill level. Leadership would ensure that accessible and accurate data is available so that teachers can build their repertoire of instructional strategies and their skill set in knowing which strategies are appropriate to implement, supported through ongoing reflective inquiry and tailored training. Finally, leadership would serve as a model by sharing data use expertise, demonstrating his/her personal commitment to the initiative through delivery of data use workshops, attending data use trainings, and supporting continuous improvement of data use initiatives. We deliberately chose the word “leadership” here because many of these expectations are implicitly left to the principal. Data use literature is clear, however, that the principal needs help in effectively carrying out these charges, often through various forms of distributed leadership (Copland, 2003; Wayman et al., 2007; Wayman, Cho, & Shaw, 2009).

Finally, a Transformational Data Use Leader should endeavor to implement the structures and systems that support effective data use. For example, he/she ensures that both time for data use collaboration is built into the professional work day for teachers and that protocols for effective data use meetings and decision-making are well articulated, understood, and followed.
consistently. The principal could additionally share power and delegate leadership throughout the campus so that capacity is developed through ongoing technical and instructional leadership training thus supporting distributed leadership systems and structures. Finally, the Transformational Data Use Principal would embed the redesigned structures by involving a wide array of community stakeholders in the processes and systems, developing a data driven community of learners.

**Conclusion**

Linking Transformational Leadership and data use serves both bodies of research. First, the data use literature is in need of theoretical representation of practices and attitudes that guide effective data use. This is particularly important for practice – with the passage of No Child Left Behind, leaders were suddenly thrust in the position of not only using data, but in leading faculties for data use. Consequently, the development of the data use literature has been largely empirical. Viewing the problem through theoretical, applicable lenses such as Transformational Leadership holds promise for improving practice.

Second, we believe linking these two bodies improves the knowledge base about Transformational Leadership. While this area has been studied in terms of concrete leaders behaviors, it has not thoroughly been studied as it applies to the problems of using data. Thus, we see our work as putting an important piece into the Transformational Leadership puzzle.

In future research, we will continue to explore these linkages. This paper represents preliminary work on the first author’s dissertation. In this dissertation, she will study the leadership behaviors of principals and relate these behaviors to data use. From this empirical data, we will more thoroughly develop the preliminary framework presented here.
References


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