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Engaging with Change: A Model for Adopting and Evaluating School-based Innovation

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Abstract

Purpose - The article presents and assesses a conceptual framework and methodology used by schools for engaging with change and determining the scope of change implementation.

Methodology - The approach employs theories of paradigm change, border pedagogy, and border crossing to frame a school's engagement with the constructs of practice that represent its program of innovation. Documentary, survey, interview, and observation methods are used to gather data about four types of engagement: aspiring, reporting, understanding, and practicing. The methodology was applied to four schools recognized for their technological innovation and broader representativeness of the United States educational establishment.

Findings - The methodology established the differential engagement of schools with change and identified a stable relative position of each school on a trajectory from aspiration to practice. These outcomes stand in contrast to findings derived from prevailing methodologies in terms of consistency of stakeholders' perspective within schools.

Research implications / limitations - The discussion of findings occurs within the context of existing literature about site-based school reform and the potential of the framework and methodology as a way to engage with change and innovation as well as account for its progress within schools. Limitations include the need for more widespread application of the approach in order to extend its generalizability.

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Article Type: Research paper

Keywords: Border pedagogy; change; change attribution; school culture; needs assessment; paradigm shift; school reform.

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Research about site-based school reform suggests that few aspects of school improvement are easy to implement and manage (Dimmock, 1999; Reynolds *et al.*, 2006; Kirst and Meister, 1985; Cuban, 1990; Pogrow, 1996; Tyack and Cuban, 2000; Weatherly and Lipsky, 1977). This is especially the case in efforts to alter classroom practice in schools (Amatea *et al.;* 1996Cuban, 2003; Elmore, 1996; Fuhrman *et al.*, 1991).

Adopting change

Contemporary efforts to alter teaching and learning in schools frequently occur within the context of the standards movement (Ravitch 1995) and high-stakes testing (Lee, 2001; Pridham, 1978). Benchmarking against performance standards has become the predominant methodology for initiating change processes in schools (Caldwell, 1998; Rothman, 1995). In the methodology, meeting state or system-level student-achievement standards indicate whether a school's performance is at an acceptable level (Olson, 2007). Underperforming schools become targets of turnaround or recovery projects that involve reforming the curriculum and teaching practice (Matthews, *et al.*, 2007).

Benchmarking in this fashion is widely employed in the US, UK, and Canada as a means of detecting and improving underperforming schools (Fullan, 2007; Ray, 2006). Also, it is a feature of the needs assessment process employed in the Comprehensive School

Reform program (Berends *et al.*, 2002; CSRQC, 2006; Hansel, 2000; Le Floch *et al.*, 2005).

A rational decision-making model (Fullan, 1993, 1996) for assessing need for change underpins the process of benchmarking. The model assumes that a school community (a) shares a common understanding and concern about school performance issues, (b) embraces a specific policy or performance standard for improving their collective performance, and (c) is committed to making the changes necessary for addressing their concerns (Caldwell, 1998; Day *et al.*, 2005). Based on these assumptions, within schools, stakeholders within schools analyze discrepancies, determine needs, identify targets, adopt goals, and make commitments to change teaching and learning practices across the school. The methodology frequently occurs with support from system level consultants or sponsors of reform models (Fullan, 2001).

Efforts to improve schools, based upon the aforementioned assumptions, have been problematic because they generate high levels of instability and divisiveness (Dimmock and Hattie, 1994; Fink and Brayman, 2004; Walker and Dimmock, 1999). These problems call into question the effectiveness of the rational decision-making approach in general and its underlying assumptions in particular. For example, Franceschini (2002) in an account of the Memphis Restructuring Initiative identified a schism between reform and school when the hyper-rationalized process (Fullan, 2001) of implementation with its assumptions and well-defined steps met the non-rational circumstances of schools (Hargreaves, 1995). Similarly, Applebaum and Schwartzbeck (2002) reported that school stakeholders were subjected to an array of forces that influenced their readiness for change.

A definitive finding of Rand's evaluation of the New American Schools (NAS) project was the instability over time of teacher and school commitment to the project's design models (Bodilly, 1998). Instability often appeared shortly after stakeholders adopted a model. Moreover, the broader literature about implementation indicated that commitment was likely to diminish the longer it took to implement a model (Datnow, 2005).

Such reactions from teachers within schools were not surprising given the historical accounts about the culture of schools (Mortimore, 2006; Sarason, 1996). Multi-generational research by Lortie (1975), Goodlad (1984), Sizer (1987), and McLaughlin and Talbert (2001) indicated that teaching and learning were constructed within schools in a highly autonomous and individualized fashion. The seminal works of these authors strongly suggested that efforts to assert common professional values and understandings were not consistent with the ways teachers constructed their personal schemata (Marshall, 1995) for teaching and learning.

The assumptions on which the rational needs assessment model is based stand in contrast to teacher's beliefs and values about (a) autonomy, (b) drivers for change, (c) role of research and data in practice, (d) meaning of evidence, (e) what works, and (f) form and function of collaboration (Dimmock, 2000; Fransceshini, 2002; Goodlad, 1984; Hargreaves, 1995; McLaughlin and Talbert, 2000; Sarason, 1996). In the majority of schools, there is little evidence of a common schema for change let alone school-level influence on teaching and learning that would engender an acceptance of the assumptions and outcomes of a benchmarking exercise at the school level (Bain, 2007).

Change attribution

Ascertaining the scope and depth of the implementation of change in schools has been as difficult, if not more so, as adopting change in the first place. Rarely does the evidence gathered during implementation permit the attribution of change in performance to the innovations implemented as part of a change process. Berends, *et al.*, (2001) noted that none of the seven models reaching the scale up phase of the NAS project had completed the formative evaluation and feedback measures included in their designs that would have permitted attribution of effects to the models.

In the instances where data about implementation integrity were gathered, the findings were disconcerting. For example, after two years only half of the 40 NAS schools examined attained the implementation level aspired for their design. After five years, the level of implementation at the schools initially identified as being high was subsequently deemed low. Further analysis found that, "about 72 percent of the total variance in implementation was within schools and 27 percent between schools" (Berends *et al.*, 2001, p. 77).

A large-scale study of the Comer School model by Cook *et al.*, (1999) indicated partial implementation of the model in sample schools. Muncey and McQuillan (1996) reported comparable findings about the implementation of the Coalition of Essential Schools model at five secondary schools. Both Cook *et al.* and Muncey and McQuillan, like Berends *et al.*, found variability in implementation within and between schools and conjecture about what actually constituted a successful outcome. Similarly, in a three-year study of 13 schools, Datnow (2005) found that

the CSR reforms ceased at six of the schools, and continued with implementation at very low levels at two others.

The findings described above indicate how difficult it is to establish implementation fidelity in a school. Essentially, all comprehensive school reforms share a sense of aspiration and belief in the potential to improve teaching and learning across a school. However, their trajectory from aspiration to practice was much more complex than depicted in either the linear trajectory associated with benchmarking, the needs assessment processes, or the limited formative feedback typically gathered throughout implementation.

Undertaking and evaluating school change assumes that stakeholders have a common sensibility about change and a plan of action that was not borne out by the longitudinal study of schools (Bain, 2007). Further, engaging in a rational needs assessment process was no assurance that a school would arrive at a stable and sustainable adoption decision. Deeper and more meaningful ways for stakeholders to engage with change are needed (Weston and Brooks, 2008) that reconcile the rational planning need assessment model (Fullan, 2001) with the complex, frequently informal, and loosely coupled culture of a school (Weick, 1976).

A reconciled approach could contribute to stability by helping stakeholders (a) undertake a realistic analysis of their circumstances, (b) learn about themselves in ways that inform commitment to change, and (c) build a school-level schema that reflects commitment and support for the desired changes (Bain, 2007). The goal of such an approach must be

integrating the requirements for change with an emergent process of self-understanding that builds school level capacity for improvement.

The present study describes a model for engaging with and evaluating the implementation of any major school-based change process. The model reconciles benchmarking and needs assessment processes with a school's knowledge of itself and its schema building. The article includes an account of the model's conceptual underpinnings, its methodology, and a summary of its application within four schools.

Conceptual framework

Four foundational concepts contributed to the framework proposed here. They are paradigm change, border pedagogy, border crossing, and contextualized quadrant mapping. The framework forms a narrative for describing a school's trajectory of change. Figure 1 depicts the trajectory.

Insert Figure 1 About Here

The paradigm change theory developed by Kuhn (1996) enables a school to reflect upon and understand the paradigm to which it is currently committed. It helps to clarify the baseline for the school at the onset of its change and the extent to which the commitment to that change is articulated or expressed in new systems, methods, tools, and practices within the school. A second concept, the "border pedagogy," from the work by Aronowitz and Giroux (1991) provides a metaphoric way for a school to think about struggles at the outer edges of a paradigm as "conflicts across borders" (Giroux, 1992). The metaphor helps a community explain and understand the ways in which a paradigmatic struggle may be playing out within its school. A third concept came from

Romo and Chavez (2006) who postulated that changes in educational practices were measurable as "border crossings" made by adherents who reject a paradigm. Romo and Roseman (2004) developed the fourth concept, a contextualized quadrant map that visually represents educational practices at a school. The map, as adapted by Weston and Brooks (2008) permits a school to explore its trajectory from a current paradigmatic commitment to an alternative. With it, a school—evaluating its implementation of change—can determine the extent it has migrated from aspiration to practice.

The four concepts, when combined, form a framework narrative through which stakeholder practices indicate the paradigm to which a school is committed. When stakeholders disengage from those practices and engage in the practices of another paradigm then they have crossed the border from one paradigm to another. A critical mass of border crossings indicates a paradigm shift at a school. The contextualized quadrant helps to represent, interpret, and plot that shift.

Utilizing the framework, stakeholders at a school can (a) explore their beliefs and values, (b) analyze their current circumstances, (c) make decisions and commitments to change, and (d) build a school-level schema that reflects commitment and support the desired changes. For a school evaluating its engagement with change, the framework can show the school's movement away from a prior paradigmatic commitment. It can generate multi-method evidence from multiple sources to map the magnitude of change, the fidelity of implementation, and work remaining. The process enables a more considered and measured engagement with change that includes realistic and timely feedback about the implementation process. Timely feedback that emerges bottom-up from multiple

sources makes it possible for the stakeholders to make adjustments and changes in implementation. By engaging with change this way, it is more likely that stakeholder decisions will produce stable and sustainable changes at their school.

Methodology

The methodology helps stakeholders assess their engagement with change. It translates the framework described above into a series of methods and tools that either frame of a change process or evaluate its implementation. The methodological components are: (a) identifying the unit of engagement with change, (b) using a multi-method approach to gather data about the depth and breadth of engagement with the unit, (c) identifying continuities and discrepancies across the unit of engagement and data-gathering methods, (d) rating level of engagement, (e) locating schools on a paradigm map, (f) visually representing commitments, and (g) documenting changes in practice.

Unit of engagement

In order to apply the methodology, stakeholders must designate a unit of engagement. A unit of engagement is a specific practice that when present indicates change. Developing the units involves identifying specific constructs of practice that contribute to the change to which the school is (or wants to be) committed.

Units of engagement emerge from the establishment of stakeholders' current (or desired) beliefs, values, and practices about teaching and learning. Developing the units draws upon the methodology employed by Bain (2007) when developing simple rules for change. Doing so involves a five-step process. One is the identifying drivers pushing the school to change. Benchmarking can be a driver. Moreover, placing benchmarking within

the broader context of forces driving the school to change puts the process within a more reasoned and understandable context. Two involves establishing what works. What can the school do about the drivers for change based on what the research says about constructs of practice (Lawton and Gordon, 2002) that have the greatest potential to make a difference? In a case where new practices are mandated, establishing what works permits a school to explore the research and experience that underpins those practices (Bloom, 1984). Identifying strengths and weaknesses is step three. What resources does the school have readily available? Four consists of making a match between the school's drivers, understanding of what constructs of practice would make the greatest difference, and resources. Five is validating that the drivers, constructs of practice, and resources have the potential to produce the needed changes at the school.

Stakeholders, after designating the constructs of practice with which they want to engage, then position each construct as a center point on a continuum, with current and desired expressions as the end-points. For example, if instruction is the center point, and whole group instruction is the current expression, then differentiated instruction can be the desired expression. Table I presents an example.

Insert Table I about Here

A school utilizing a *Construct of Practice Continuum* is better able to place its current commitment and future aspirations within a practice context. The process does not assume that the community recognizes the validity of a benchmarking process. Instead, it enables a school to build the self-knowledge and understanding necessary to adopt a benchmarking, or other approach, to change. Informed by the process of identifying units

of engagement, the school has a deeper understanding of its circumstances, forces, or events driving change, and what that change entails. When evaluating an implementation process, having identified the units of engagement helps to clarify baseline conditions, the objects of evaluation, and the desired outcome of the change process within a school.

Measuring engagement

A multiple method approach is used to assess level of engagement with the constructs of practice and to determine whether stakeholder beliefs and values match practice. The methods are documentary (Feldman, 1995), survey (Atkinson *et al.*, 2003), interview (Mishler, 1986), and observation (Lofland, 1971). They aid in gathering data about four types of engagement: aspiring, reporting, understanding, and practicing. Each type of engagement represents a level of commitment to an expression of a construct. By doing so, each type of engagement articulates and operationalizes the *Construct of Practice Continuum.* The *Method and Engagement Category Field—Example* (Table II) describes the data-gathering methods matched with engagement type.

Insert Table II About Here

Specifically, aspiring means that a stakeholder group has established a goal, objective, or priority associated with the construct of practice. Reporting means that members of the same group provided a written answer—to a written question from the researcher—about engagement with a construct of practice. Understanding means that members of the group gave a verbal response to a verbal question—provided by the researcher—about engagement with a construct of practice. Practicing means that group members took a specific observable action that involved a construct of practice.

The documentary method generates written artifacts. Checklists aid in gathering documentary data about stakeholders aspiring for engagement with an expression. Data examples include annual reports, curriculum guides, job descriptions, and mission statements.

The survey method generates written responses to written questions that indicate stakeholder reporting about their engagement with an expression. For example, to acquire reporting data about the instruction construct of practice a survey question might ask, "How often do you customize your instruction to accommodate differences in student achievement and aptitude among students in the same class?" Another question might ask, "How much of your curriculum exists in a differentiated format?"

The interview method generates transcripts. Interview guides contain questions and prompts that get stakeholders to demonstrate their understanding of their engagement with an expression. For example, an interviewer might ask, "In your classroom practice, what do you do to accommodate individual difference among children? Please give me an example." The interviewer might then ask, "Please give me an example of how your curriculum is individualized…" followed by a prompt, "please give me another example."

The observation method generates records of incidents. Observation checklists capture incidents in which the stakeholder is practicing engagement with the constructs of practice that they have designated. Each construct is readily observable. The researcher,

embedded in the school, makes scheduled observations of classrooms and other parts of the school (e.g., cafeteria). The researcher seeks evidence of stakeholder engagement with the constructs. For example, the observation checklist might include a section for real-time evidence of differentiated instruction. Specifically, is there real-time evidence of differentiated assignments, materials, or classroom activities?

Combining the engagement types with the data gathering methods, forms an Engagement with Change Matrix—Example (Table III). The matrix represents the intersection of the construct expressions, data-gathering methods, and engagement types. Each point of intersection forms a cell. For instance, the matrix has a cell that contains documentary evidence about aspiration to provide ubiquitous access to information. Singularly and collectively, the cells help provide a deeper view of stakeholder engagement with change.

Insert Table III About Here

Data processing

Data processing consists of five steps to move from analyzing a school's raw data to establishing its paradigm commitment (see Figure 2). Step one is processing the raw data gathered via the documentary, interview, and observation methods. Processing involves creating a thread for each data gathering method, type of engagement, and construct of practice. A thread is a clump of raw data that reflects engagement. Creating a thread makes synthesizing raw data more manageable and analyzable. It involves identifying arrangements, configurations, patterns, and relationships. Threads of data that add up to become evidence of engagement are comprised of excerpts, passages, quotes, and

citations in the documents, interview transcripts, and classroom materials. For the survey data, processing raw data involves creating tabulations.

Insert Figure 2 About Here

Second, rating the threads and tabulated data involves using protocols that define the multiplicity, strength, and explicitness of engagement. A rating quantifies the level and type of engagement with the expressions of the constructs of practice. A higher rating indicates more multiplicity, strength, and explicitness and a greater engagement with change. Eventually, each rating becomes a cell entry on the *Engagement with Change Matrix*. The rating for each cell ranges from 1 through 5, with 1 indicating low engagement and 5 high engagement. Third, adding the four cell ratings in a row forms a set rating. The rating for each set ranges from 5 through 20. Next, is creating a section by summing the five sets. The ratings for each section range from 20 through 100. The last step involves averaging the two section ratings for the school to create a paradigm commitment rating.

Data representation

The methodology presents three ways of viewing the evidence of engagement with the constructs of practice. One is the *Engagement with Change Matrix*. The matrix represents the intersection of the constructs of practice designated by the stakeholders and the four data-gathering methods and engagement types of the methodology. Each point of intersection forms a *cell* that represents the level and type of engagement. For instance, the matrix could have a cell that contains the documentary evidence of a stakeholder aspiring to differentiate instruction. Individually and collectively, cells provide a deeper

view of stakeholder engagement with the expressions of the constructs of practice. The matrix and its cells make the clusters of data more apparent and loosen the boundaries between them. Table IV presents *Engagement with Change Matrix—Example*.

Two, the level and type of engagement with the construct indicates commitment. A rating quantifies level and type of engagement with a construct of practice. A higher rating indicates a greater commitment to a paradigm. Commitment ratings range from 20 through 100. The *School Paradigm Commitment Rating—Example* (Table V) presents a summary of the ratings.

Three, is a contextualized quadrant map that visually represents a school's paradigm commitment. The map quadrants are (a) current paradigm, (b) idiosyncratic activity, (c) school of thought and practice, and (d) alternate-education paradigm. The current paradigm quadrant represents a commitment by a school to its current condition or the status quo as indicated by the engagement of its stakeholders with expressions of the constructs of practice that are consistent with the current paradigm. The idiosyncratic activity quadrant represents a disparate commitment to the alternate-education paradigm made by a school as indicated by the disjointed engagement of its stakeholders with the expressions of the constructs of practice for an alternate-education paradigm. The school of thought and practice quadrant represents a pervasive commitment to the alternate-education paradigm made by a school as indicated by the extensive engagement of its stakeholders with the expressions for an alternate-education paradigm. The alternate-education paradigm quadrant represents a replicated commitment to the alternate-education paradigm as indicated by replication of an identical school of thought and

practice at multiple sites. For a school to be represented in this quadrant, it would have to demonstrate via the methodology that it was one of a number of like schools similarly engaged with the constructs. Figure 3 presents the *Education Paradigm Pedagogy Map—Example.*

Assessing engagement: A case study

The study applied the framework and methodology to four schools representing a cross-section of the contemporary American educational establishment. The schools represent: (a) public and private education; (b) elementary, middle, and secondary levels; (c) charter, pilot, and conventional governance relationships; (d) technology availability; (e) diverse student populations; and (f) rural, urban, and suburban locations. Each school had a demonstrable record of educational accomplishment in the innovative use of technology as evidenced by attention from media, professional associations, professional publications, and recognition within their broader systems and communities (Huebner and Corbett, 2004). Each also (a) aspired for school wide change, (b) committed significant resources to their change process, (c) included technology as an essential component of their change effort, and (d) selected constructs of practice they believed had potential for improving student learning. The schools intended to use the data generated by the study to establish new baselines and determine next steps for their respective change processes.

Schools

School One is a private residential high school (grades 9-12) located in rural New England with 360 tuition-paying students in attendance. The student population is 13% Asian, 5% African American, 1% Hispanic, 83% Caucasian, and 40% of the students have learning disabilities. The school has 99 fulltime staff, 41 non-instructional and 58 instructional.

School Two is a pilot high school (grades 9-12) in a large urban school system located in the northeastern United States with 300 students in attendance. The student population is 6% Asian, 53% African American, 28% Hispanic, 13% Caucasian, and 85% of the students are eligible for free-and-reduced meals. The school has 37 fulltime staff, eight non-instructional and 29 instructional.

School Three is part of the fourth largest county school system in a southeastern state. It opened as an elementary school in fall 2000, earning charter status in January 2005. Seven-hundred and twenty-two students attend grades pre-kindergarten through five, 64% are non-English speaking language proficient, 21% Caucasian, 79% minority, with 48% of the overall student population African American. The school has 78 fulltime staff, 17 non-instructional and 61 instructional.

School Four is part of the sixth largest county school system in a southeastern state. It opened as middle school in August 2000. Approximately 1,660 students attend grades six through eight, 50% the students are Caucasian, 39% African American, 5% Hispanic, 3% Asian, 3% interracial and 32% of the overall student population receives free-and-reduced meals, 17% participate in early intervention programs, and 12% are enrolled in

special education programs. The school has 128 fulltime staff, 31 non-instructional and 97 instructional.

Participants

A sample of 40 instructors, and 18 site leaders (non-instructors with supervisory or administrative responsibilities) from across the schools participated in the study. Each group represented a cross section of grade level, discipline, and function at their respective school and across schools. For School One, the sample had 15 participants, 10 instructors, and five site leaders. The sample group for School Two consisted of 16 participants, 11 instructors, and five site leaders. At School Three the sample had 12 participants, nine instructors, and three site leaders. Fifteen participants, 10 instructors, and 5 site leaders comprised the sample group at School Four. For each school, the site-coordinator and researcher collaborated to select the participants. Participation was voluntary.

Data collection

Data gathering took over 370 hours. The lead author spent between 60 to 80 hours on site at each school. Every data gathering method was applied to each member of the stakeholder sample. Forty percent of the time involved applying the methodology; the rest involved testing and refining the methodology for future use. Future application of the methodology would not require this time.

Results

The *Engagement with Change Matrix—Example* (Table IV) presents evidence about the level and type of engagement with the five construct expressions at each school. The

matrix shows School 1 demonstrated high levels of engagement with each construct. Of the expressions, the school engaged more with differentiated instruction, ubiquitous access to information, and feedback about performance and less with engagement of parents in their child's learning. School Two demonstrated inconsistent engagement with change. Its aspiration, reporting, understanding and practicing with the five construct expressions was inconsistent and often disjointed. Of the expressions, the school engaged more with engagement of parents and ubiquitous access to information and less with accommodating learning modality preference. School Three also demonstrated inconsistent engagement with change, but had a higher level of engagement than School Two. Of the expressions, School Three engaged more with differentiated instruction, engagement of parents, and timely formative and summative assessment of performance. the school engaged less with ubiquitous access to information. School Four demonstrated minimal engagement. This means the school had limited engagement with change, most with the current, not the desired, expressions of the constructs of practice.

Insert Table IV About Here

Engagement with Change Trajectory—Example (Table V) reports the range of variation between the schools' aspiration and actual practice. Collectively, levels of aspiration were higher than practice for the schools. Moreover, that pattern held more or less for each school. Across the four engagement types, School One with an average engagement level of 16.3 out of a possible 20 and a -2 differential had the highest overall level of engagement and the greatest consistency across types of engagement. School Four had the lowest level of overall engagement with an average of 9.8 out of 20. School Two with

the second lowest level of aspiration had the greatest differential, -6, between aspiration and practice.

Insert Table V About Here

Each school earned a paradigm commitment rating that ranged from 20 to 100. In accordance with the conceptual framework, a high paradigm commitment rating indicated greater engagement with change and a consistent trajectory from aspiration through practice as calculated from the ratings of the cells, sets, and sections for each sample. Table VI reports the ratings for the four schools.

Insert Table VI About Here

In the table, School One is shown to have earned a paradigm commitment rating of 67, School Two a rating of 45, School Three a rating of 54, and School Four a rating of 30 out of a possible100. This means that based on the calculations of the ratings, School One achieved a solid school of thought and practice engagement with change. Such engagement is characterized by general, widespread engagement with change. School Two had an idiosyncratic commitment to an alternate-education paradigm. School Three also achieved a strong idiosyncratic commitment to an alternate-education paradigm that is characterized as frequent, but inconsistent often-disjointed engagement with change. School Four had a minimal commitment to an alternate-education paradigm. Widespread, consistent engagement with the prevailing expressions of the five constructs of practice characterizes a minimal commitment.

When the schools, based on their commitment ratings, are plotted on the *Education Paradigm Pedagogy Map—Four Schools* (Figure 3), School One is in quadrant 3, Schools Two and Three in quadrant 2, and School Four in quadrant 1. Based on its engagement with change, School One can be said to have crossed two borders, Schools Two and Three one border, and School Four none. School One has a schema in place that supports pervasive and consistent engagement with the desired expressions of the constructs of practice.

Insert Figure 3 About Here

Discussion

The results of the study generated a number of findings relevant to both the issues raised in the review of the literature and the utility of the framework and methodology described herein. First, the data indicated a high degree of similarity in the aspirations of the schools involved in the study. However, only School One managed to translate its aspiration into practice at scale. The high aspiration of the other three schools faded as the methodology assessed reporting, understanding, and practicing. Those schools indicated a pattern of responding that is consistent with a predominance of the comprehensive school reform literature, which indicates fading fidelity as the scrutiny of implementation intensifies (Applebaum and Schwartzbeck, 2002). Further investigation of the change process in School One is warranted to establish how it managed to attain a school of thought and practice engagement with change.

Second, with few exceptions (e.g. engagement with parents at School One, a boarding school) there was a relatively high degree of within school consistency in engagement

with the constructs investigated. Each of the participating schools showed lower levels of within school variance indicated by the consistency in the responses across methodologies/respondents and constructs and higher levels of between school variance in engagement with the constructs. This finding is the opposite of the trend described by Berends *et al.,* (2001) that showed more in school than between school variance in engagement with change.

Third, the methodology was able to detect and distinguish different levels of engagement with change across the four schools. The findings show one school with a pervasive level of commitment, two schools with idiosyncratic levels of commitment, and one school with a minimal level of commitment to school change. Fourth, there were relatively high levels of concordance across the data gathering methodologies for instructors and leaders. The combination of site-leader and instructor group engagement with the expressions confirmed the commitment to change of their respective schools.

Fifth, the methodology provided stakeholders with multiple opportunities for analyzing their complex circumstances. In previous research, consistency in responding across methods, sources, and levels of the school reflected the kind of shared perspective indicative of schema development (Bain, 2007). It appeared that instructor and site-leader groups had similar perspectives about the disposition of the schools in the engagement with the constructs of practice.

Sixth, the use of multiple-methods and multiple sources proved effective in identifying continuities and discontinuities in the engagement of the schools with the constructs. The differences in aspiration, reporting, understanding, and practicing described in

Engagement with Change Trajectory—Example (Table V) indicates the continuities and discontinuities in the engagement. The capacity of the methodology to detect these discontinuities stands in contrast to the limited capacities of prior comprehensive reforms to detect their implementation integrity (Berends *et al.*, 2001).

Seventh, while not described formally in this study, there was a high degree of agreement among participants about the way the data located their schools on the paradigm map. When the first author visited schools to report the findings, school representatives unanimously validated the findings. At three of the four sites, the entire school community received a presentation of the findings. At two of the sites, senior staff requested a special follow-up briefing. The data presented at that briefing assisted them in locating their school on the paradigm map and informing the subsequent phases of their change process. These experiences suggest that the method has high levels of face validity and capacity to reflect the beliefs, dispositions, and attitudes of stakeholders in each school.

An eighth major finding of the study also emerged from the process of reporting the data to the respective school communities. Three of the four sites requested that the lead researcher do a year two application of the methodology. In all schools, representatives reported that the conceptual framework and methodology helped them understand and frame the complex change processes of which they were a part. All reported that the metaphors of paradigm shift, border pedagogy, and border crossing resonated with the visceral experience of the teachers and leaders in the four communities. There were several instances when participants, upon understanding the metaphors, responded with

high degrees of emotion to the way in which the methodology's descriptors epitomized the stresses of the change experience. For instance, one participant commented about the "loneliness" of being across the border when her colleagues were not. The framework and its articulation in the methodology provided a way for the schools to see and understand their change process at a meta-level in a manner that is conducive to the development of school-wide schemas.

In summary, the instability of outcome associated with the rational needs-assessment approach to school change drove the development of the alternative means of assessing and evaluating engagement with change described here. Overall, the findings showed that the methodology was capable of (a) generating consistent, stable data from multiple sources, (b) detecting differences and similarities across settings, and (c) assisting stakeholders in each of the participating schools to understand their change process. While schema development was not measured directly, the findings indicated that the participating teachers and site leaders had developed a common perspective on their change that stands in contrast to the instability described in the broader comprehensive school reform literature (Applebaum and Schwartzbeck 2002).

Limitations

While the study generated extensive quantitative data, the approach taken here has its antecedents in qualitative research, specifically case study. Case study is a widely accepted qualitative research method (Stake, 1995). However, it does possess several inherent limitations, most notably internal and external threats to extended inference and objectivity (Campbell and Stanley, 1963).

In the present study, the source of these threats includes the study's focus on just four schools. The schools were unmatched (e.g., population served). As such, comparisons and extended inference about the sources of difference across them and the generalization of the findings to a broader range of schools are problematic. The scope of the participant sample and its selection (between 15 to 40% of the site-leader and instructor population) cannot be deemed to represent the views of all members of the community. While the design of the methodology helped probe multiple perspectives on five constructs, one cannot assume a full and complete understanding of the meaning of those constructs given the issues associated with the absence of both school level schema and sustained professional cultures of practice in schools.

The quantitative data were not subject to statistical analysis in order to establish parametric statistical differences and any probabilistic likelihood associated with the findings. Nor were the survey instruments subject to validation from a normative assessment perspective. As such, the reference to variance in the results section does not allude to a parametric statistical interpretation of such terms but to similarities and differences in the descriptive data.

Consistent with the case study tradition, the full potential of this methodology is best realized by the interrogation of those views and perspectives represented by the descriptive statistical data (Creswell and Plano Clark, 2007) in order to establish a deeper understanding of the school's engagement with change. As such, the descriptive data points represent summative placeholders for the detailed views and perspectives that underpin them. The quantitative data permitted the respondents locate their schools and

efforts within the paradigm map and to use the lexicon associated with the conceptual framework, features that were deemed highly informative and useful. However, it is the specific continuities and discontinuities represented by the numerical data that are most informative to the change processes with which the schools were engaged. A deeper investigation of that data would contribute to a better understanding of the (a) variables prompting stakeholders to engage with change by crossing borders; (b) impact, if any, that the crossing had on stakeholders left behind; (c) variables encountered by stakeholders crossing borders; (d) experience of stakeholders arriving in a new quadrant; (e) activities they engaged in after arrival; and (f) relationship of their migration to the building of schema.

Moreover, since the study revealed that one of the schools resided in quadrant three, finding other similarly disposed schools could assist in developing a more fulsome understanding of the migration from quadrant three to quadrant four and the ways to scale up a school of thought and practice to become a paradigm shift.

Conclusion

With due recognition of its limitations, the findings of the study lend support to extending the investigation of the framework and methodology to a broader range of schools. The difficulties experienced by schools as they engage with major change and the persistence with methodologies that are not realistic for, or responsive to, the prevailing cultures of those communities (Dimmock, 2000; Fransceshini, 2002; Goodlad, 1984; Hargreaves, 1995; McLaughlin and Talbert, 2000; Sarason, 1996) create both drivers and opportunity for extending this work. Future research should include an examination of the factors that

contribute to schema building and development of the professional culture of practice that permits a more stable and sustained engagement with change.

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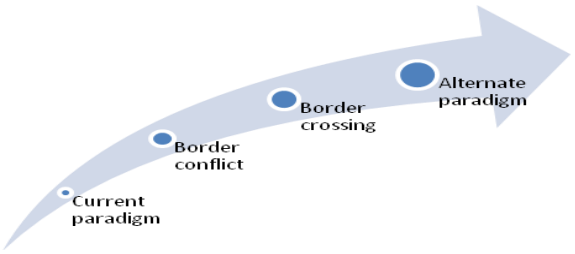

Figure 1. *Trajectory of Change—School*

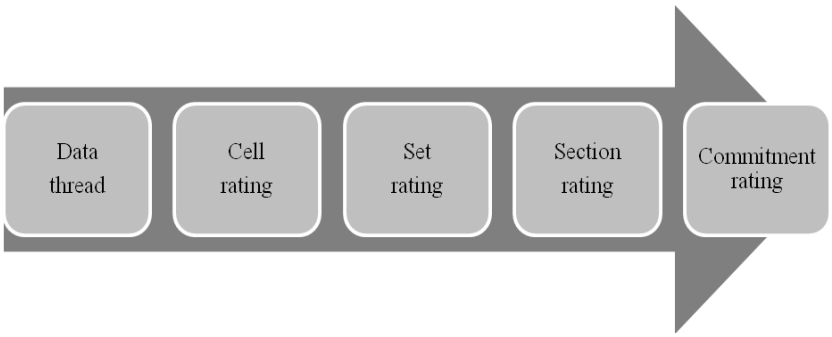

Figure 2: Data Processing Sequence

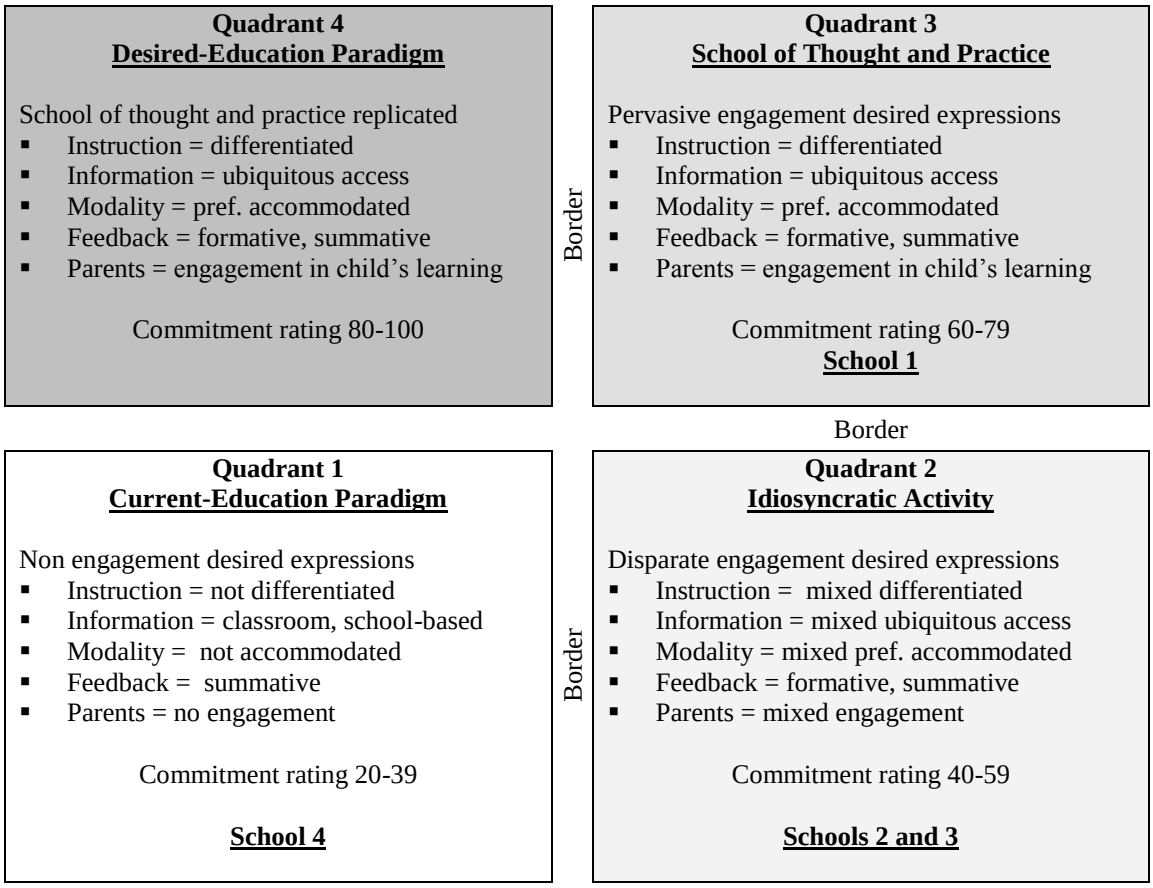

Figure 3
Education Paradigm Pedagogy Map—Four Schools

Table I

Construct of Practice Continuum—Example

Current Expression	Construct of Practice	Desired Expression
Whole group, not differentiated	Instruction	Differentiated
Classroom only	Information access	Real time, ubiquitous
Single (text)	Modality	Multiple, accommodated
Delayed, summative	Performance feedback	Immediate, formative, summative
Not engaged	Parents	Engaged

Table II
Method and Engagement Category Field—Example

Documentary	Survey	Interview	Observation
Aspiring	Reporting	Understanding	Practicing

Table II
Engagement with Change Matrix—Example

		Data Gathering Method			
		Documentary	Survey	Interview	Observation
	Engagement type	Aspiring	Reporting	Understanding	Practicing
Construct Expression	Differentiated instruction				
	Ubiquitous access to information				
	Accommodation learning-modality preference				
	Feedback about performance				
	Engagement of parents				

Table IV
Engagement with Change Matrix—Example

		Instructor Sample School One	Site-leader Sample School One	Instructor Sample School Two	Site-leader Sample School Two	Instructor Sample School Three	Site-leader Sample School Three	Instructor Sample School Four	Site-leader Sample School Four
Expressions of Constructs of Practice	Differentiate instruction	16	16	7	11	14	14	8	6
	Ubiquitous access to information	16	16	10	10	6	8	5	5
	Accommodate modality preference	8	12	5	7	10	11	8	6
	Feedback about performance	16	16	9	9	13	10	6	5
	Engagement of parents	10	8	11	11	13	13	6	6
School section rating		66	68	42	47	56	53	33	29

Table V

Engagement with Change Trajectory—Example

		Engagement Type					
		Aspire	Report	Understand	Practice	Ave	Dif
Schools	One	17	16	17	15	16.3	-2
	Two	14	12	10	8	11	-6
	Three	15	15	15	11	14	-4
	Four	12	12	8	7	9.8	-5
		14.5	13.8	12.5	10.3		

Table VI
School Paradigm Commitment Rating—Example

	Sample	Section	Commitment Rating
School One	Site leader sample 1	68	67
	Instructor sample 1	66	
School Two	Site leader sample 2	47	44
	Instructor sample 2	42	
School Three	Site leader sample 3	53	54
	Instructor sample 3	56	
School Four	Site leader sample 4	29	31
	Instructor sample 4	33	