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**The Internal Coherence Assessment Protocol & Developmental Framework:
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Abstract

Purpose

In this paper we describe the Internal Coherence (IC) model of assessment and professional development, a set of clinical tools and practices designed to help practitioners foster the organizational conditions required for whole-school instructional improvement.

Proposed Conceptual Argument

We argue that the data captured by the IC assessment protocol (ICAP) and the attendant supports for schools and systems help bridge the gap between performance indicators provided by external accountability systems and guidance on concrete steps for improving teaching and learning in individual schools. The IC framework interweaves previously disparate lines of research, including leadership, organizational learning, and social cognitive theory, into a developmental framework for understanding how schools improve.

Implications

We posit that bringing these conceptual foundations together allows us to construct a pathway for school and district leaders that can guide them in the creation of structures and conditions for continuous adult learning and build educators' collective confidence in their pursuit of improvements to the instructional core.

Keywords: internal coherence, leadership, organizational learning, collective efficacy, school improvement

Introduction

There is an emerging consensus across various research literatures on the organizational conditions that must be present in schools to promote both excellence and equity in student learning (King & Bouchard, 2011). These include leadership that is distributed and focused on instruction; coherence in the instructional program; ongoing, embedded professional development; professional learning communities anchored in data on instruction and student learning; and teachers' confidence in and responsibility for their efforts to obtain desired student outcomes. Despite this consensus, the current emphasis on performance-based accountability and the closure or turnaround of failing schools through a replacement of key personnel fails to address issues of individual school capacity to organize for and execute strategies for improvement.

The Internal Coherence Project has created an empirically based framework for understanding school capacity and a process of assessment and support that schools and school systems can use to foster school-wide improvement. We define *internal coherence* (IC) as a school's capacity to engage in deliberate improvements in instructional practice and student learning across classrooms over time, as evidenced by educator practices and organizational processes that connect and align work across the organization (Abelman, Elmore, Even, Kenyon, & Marshall, 1999; City, Elmore, Fiarman & Teitel, 2009; Elmore & Forman, 2011). Therefore, the goals of the IC Project are to build school leaders' understanding of and ability to act on the characteristics of effective school organizations. Specifically, we have created the Internal Coherence Assessment Protocol (ICAP), which combines survey, interview, and observational data to produce a diagnostic assessment

profile and provide a starting point for professional development. The ICAP bridges the gap between research and practice by providing school leaders with information about the specific leadership practices, organizational processes, and teacher efficacy beliefs they can foster to enhance school capacity for improvement.

Since the onset of No Child Left Behind (2001), we have seen vast numbers of schools across the nation prove unable to respond to external pressure to improve, despite the threat of sanctions or closure. The current emphasis on performance-based accountability in school reform highlights an additional problem in the theory and practice of school improvement: accountability systems are designed to measure performance, but they are unable to provide guidance to school leaders and teachers about what specific steps to take to improve their performance. Most state and local accountability systems provide student performance data, but few, if any, focus on providing schools with information about how their organizations actually work, and how they might work more powerfully to support instructional improvement (Anderson, Leithwood, & Strauss, 2010; Halverson, 2010; Coburn & Turner, 2012). Schools now have an abundance of data on student performance with which to make decisions (Colyvas, 2012; Gallagher, Means, & Padilla, 2008), and school leaders know, when they look at evidence of student performance, that they are supposed to “do something” to bring the resources of the organization to bear on instructional practice; however, they are usually less clear about what to do.

There is a rich and useful literature around the characteristics of effective educational leaders, and the role of leaders in improving low-performing schools (Edmondson, 2008;

Leithwood & Jantzi, 2005; Marks & Printy, 2003; Spillane, Halverson, & Diamond, 2004). The ICAP shifts the existing focus in the literature from the general characteristics of successful leaders to the actual leadership practices that support improvement of classroom instruction, over time. Specifically, the ICAP homes in on the practices that leaders can use to improve the *instructional core*, defined as the relationship between the teacher and the student in the presence of content (City et al., 2009; Cohen & Ball, 1999).

Furthermore, the ICAP identifies specific organizational processes that support ongoing learning. Accountability policies require improvement over time, which in turn implies that the organizations and the people in them are not simply adapting to the requirements of a new policy environment, but that they are *learning to act in new ways*, both individually and collectively, in response to signals from their external environment (Elmore, 2004; Childress, Elmore, Grossman, & Johnson, 2007a). So the success of accountability policy and of school improvement strategies more generally depends on the ability of schools and the systems in which they reside to grow, adapt, and increase their knowledge, skill, and integrative functions over time. To suggest that students learn at different levels is to suggest not only that teachers should be doing things differently, but also that they should be engaged in individual and collective learning about *how* to do things differently (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Garet, Porter, & Desimone, 2001).

Finally, the ICAP identifies specific practices for strengthening teacher efficacy beliefs over time. Researchers have shown that collective efficacy, or teachers' beliefs about

their faculty's joint ability to bring about student learning, is a powerful predictor of student achievement (Goddard, Hoy, & Hoy, 2004; Moolenaar, Slegers, & Daly, 2012). However, there are no existing interventions designed to foster these beliefs among educators by linking faculty perceptions of their ability to improve student outcomes to their daily enactive experiences in schools. The ICAP addresses this gap by providing school leaders with information about specific practices that could be put into place to strengthen efficacy beliefs for instructional improvement, including instructional leadership practices and opportunities for teacher collaboration, which have been found to predict stronger collective efficacy beliefs (Goddard, Goddard, Kim, & Miller, in press).

In this paper, we describe how the IC framework brings together streams of research from the leadership, organizational learning, and social cognitive literatures to propose a pathway from 1) leadership behaviors, to 2) whole-school and team organizational processes for collaboration, to 3) the individual and collective efficacy beliefs of teachers, and, ultimately, to 4) improved student achievement (see Figure 1). Our proposed framework weaves together and reframes existing theory from organizational behavior and social cognition in two key ways. First, IC brings together the socio-cultural and cognitive dimensions of organizational learning and situates them in the school context to provide a more complete picture of the *structures* and *processes* related to schools' organizational capacity for improvement over time. Second, IC focuses on the ongoing experiences of teachers and leaders in the present tense—rather than evidence of past mastery or student achievement in prior years—as the key drivers of teachers'

perceptions of their collective ability to improve student learning in the future. We argue that bringing these theories together allows us to construct a developmental pathway for school leaders, to guide them in the creation of the structures and conditions for adult learning, and to build teachers' collective confidence and resolve in their pursuit of improvements to teaching and learning.

Theory Development through Clinical Practice: The Internal Coherence

Framework and Assessment Protocol

At the IC Project, we utilize a clinical approach to support school leaders, meaning we embed learning about IC in the authentic work of schools. Just as student teachers learn about instruction through their clinical fieldwork, school leaders learn about the IC model and are supported to make corresponding changes in their schools at the same time. By using diagnostic information from the ICAP and related professional development to build capacity in each domain of the framework, school leaders can develop and test their theories of what will improve student learning and teaching practice in the context of their school experiences, and we support them to revise those theories over time (Donovan, 2013).

Unfortunately, one of the problems plaguing school improvement is that, as compared with other fields, education has a relatively weak basis in clinical practice. That is, in fields like medicine, social work, and counseling, practitioners have access to a collection of assessment tools and routines that support their work with clients, and they are trained to use these clinical tools as part of their everyday work (Burkhardt & Schoenfeld, 2003).

Although a relatively solid and useful research base exists related to school improvement (e.g., Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010; Leithwood & Jantzi, 2005; Marzano, Walters, & McNulty, 2005), the field of education has been slow to develop useable clinical tools to support practitioners in their work. The ICAP, which consists of a teachers' survey, a series of interview and classroom observation protocols, and a range of professional development practices for school and district leaders to make use of school-level data, is an attempt to develop such a tool (see Appendix A).

The ICAP was first developed in collaboration with the SERP Institute and senior administrators in the Boston Public Schools. The school profile that results from the ICAP survey, interview, and observation data can serve as a diagnostic tool that systems or districts can use to strategically allocate resources based on individual schools' readiness to capitalize on them, as reflected by their composite measure of IC. The ICAP is also intended to be useful as a clinical instrument. That is, it is designed to generate information about the school that school leaders and their system-level supervisors can use to identify the most powerful levers for moving a particular school along a developmental trajectory for the capacity for ongoing, whole-school improvement. Recent work by Stosich (in press) advanced the development of the survey and indicates that the revised IC survey is a valid and reliable tool for measuring the extent to which specific leadership practices, organizational processes, and efficacy beliefs related to school improvement capacity are in place in schools.

The ICAP has undergone three iterations over several waves of fieldwork in Boston, Fort

Worth, Texas, and the project's current collaboration with the public school system in Clovis, California. Following the SERP Institute's model of leveraging research and practice partnerships, the data generated by the school-level assessment and associated professional development process serves to inform ongoing revisions to both the ICAP instruments and protocols and the supporting theoretical framework. The IC project is also committed to avoiding a consultancy model and embeds a transfer of capacity for leading the work of assessment and support to schools and districts into the contract for the partnership. Such a commitment requires a reinterpretation and integration of the model in each new context, to ensure that the protocols are embedded most powerfully into the district's existing structures and processes.

The IC framework evolves from earlier research linking individual schools' levels of internal accountability to their ability to respond to mandates from the external policy environment (Abelman et al., 1999), and to generate school-wide improvements to teaching and learning more generally (City et al., 2009). The ICAP measures the three broad domains of IC: 1) leadership practices for instructional improvement, 2) organizational processes (at two levels: whole-school and team), and 3) efficacy beliefs (see Appendix A). These broad domains are interrelated and reciprocally reinforcing, rather than existing in a linear relation to each other or the process of improvement. However, some implicit order of operations does exist: leadership practices create the structures, drive and support the processes, and foster the culture that, over time, will bolster both individual and collective efficacy beliefs and, ultimately, student

achievement. The following sections provide more detail about the domains and factors of the IC framework.

Domain I: Leadership for Instructional Improvement

There is general agreement in the field that strong leadership is an important prerequisite for school improvement and performance (Bryk et al., 2010; Fullan, 2007; Hallinger & Murphy, 1985). Leaders play an important role in creating concrete structures and fostering an instructional culture that supports the faculty in reaching improvement goals (Louis, Leithwood, Wahlstrom, & Anderson, 2010). Existing evidence demonstrates that leadership behaviors and practices are related to improving student outcomes through their influence on teachers (Heck & Hallinger, 2009; Marzano, Waters, & McNulty, 2005; Robinson, Lloyd, & Rowe, 2008).

Over the past two decades, visions of school leadership have fallen into two distinct categories: instructional and transformational. Instructional leadership traditionally holds the principal as the primary source of educational expertise, responsible for maintaining high expectations for teachers, coordinating curriculum, supervising instruction and monitoring student progress (Marks & Printy, 2003; Barth, 1986). This focus on instruction requires a baseline competence in instructional practice. Transformational leadership aims to transform school cultures, providing intellectual direction that fosters innovation and empowers and supports teachers (Marks & Printy, 2003; Firestone & Louis, 1999; Leithwood & Jantzi, 1999). Most recent research indicates that school

leadership able to integrate aspects of the two will have the most potent effect on teachers' instructional practices (Goddard et al., 2010; Printy, Marks, & Bowers, 2009).

Leadership practices associated with high IC combine the concept of "*shared instructional leadership*" (Marks & Printy, 2003) with the focus on culture associated with transformational leadership particularly as it relates to the creation of a learning environment (Edmondson, 2002). Shared instructional leadership is characterized by the active, ongoing collaboration of principals and teachers on issues of teaching and learning. Here, principals involve teachers in sustained dialogue and decision-making around instruction and student learning, while remaining central agents for change (Marks & Printy, 2003; Darling-Hammond, 1988; Rowan, 1990).

The leadership domain of the IC framework also draws on the organizational learning literature, specifically the finding that leaders in organizations with high capacity for improvement encourage ongoing learning and actively work to establish organizational processes and culture conducive to learning (Garvin, Edmondson, & Gino, 2008). Garvin et al. (2008) argue that leaders must identify key levers in both the *conditions* of learning, such as individual team processes and levels of psychological safety, as well as *structures* for information collection, transfer, and analysis. We believe the leadership practice associated with high levels of IC is related to four key factors: modeling public learning, creating a learning environment, active engagement in teaching and learning, and providing meaningful professional development.

Leadership for learning. Leaders model learning as a core value by inviting input from faculty in discussions about teaching and learning, asking probing questions, listening attentively, and seeking out multiple points of view. To model public learning, leaders also depart from the traditional stance of having all the answers by acknowledging personal limitations with respect to knowledge and expertise (Garvin et al., 2008). Leaders who encourage learning are directly involved in supporting teachers in the classrooms. Teachers in schools with leaders who display this quality perceive that leaders' visits to classrooms are frequent and systematic (MCREL, 2005) and report that leaders use observation data to give them feedback on instruction.

Psychological safety. An environment that is conducive to ongoing adult learning is supportive of the risk-taking inherent for teachers making fundamental changes to practice. We assess whether the principal has established *psychological safety*, or an environment where individuals are supported in experimenting with untested approaches, publicly seek help with new practices, and speak candidly about challenges they face in their work (Edmondson, 2002; Garvin, Gino, & Edmondson, 2008).

Professional development. Leaders ensure that educators have access to useful professional development (PD) when teachers reach the limits of their knowledge. PD must also be connected to the school's overall improvement strategy, job-embedded and sustained, and based on teachers actively learning about instruction (Blank & De las Alas, 2009; Darling-Hammond et al., 2009).

Domains 2 and 3: Whole-School and Team Organizational Processes

The IC framework builds on research on organizational learning from the business sector, adapting existing theory to the unique context of schools. Organizational learning scholars suggest that organizations improve when they build capacity for learning and leadership broadly in the organization, and when they deliberately focus on the learning of the group, rather than the individual (Edmondson 2002; Crossan & Berdrow 2003). In order for a school to function as a system, as opposed to a collection of atomized individuals, it must contain the structures and protocols for engaging in collective work, the individuals must view those structures and processes as calling on their knowledge and skill, and the structures and processes should align in the service of school improvement goals (Honig & Hatch, 2004; Childress, Elmore, Grossman, & Johnson, 2007a; 2007b; Newmann, Smith, Allensworth, & Bryk, 2001).

Despite extensive research on organizational learning in schools, the capacity to translate this knowledge into an education context remains limited (Darling-Hammond, 1996; DuFour & Eaker, 1998; Fullan, 2000; Schechter, 2008). Translations of organizational learning theory to education are typically idealistic and excessively broad, rendering practitioners unable to identify a sequence of steps for moving forward (Fullan, 2000; Garvin et al., 2008; Schechter, 2008; Zemke, 1999). Organizational learning was originally described as a cognitive process, related to the environmental factors that support individuals in thinking about complex problems, solving them, applying these solutions, and disseminating this learning (Argyris & Schon, 1996; Schechter, 2008). However, more recent research focuses on the socio-cultural dimension of organizational learning,

which seeks to understand how people learn through social interactions and the conditions that support socially embedded work (Higgins, Ishimaru, Holcombe, & Fowler, 2011; Honig, 2008). This line of scholarship parallels work in education that suggests the importance of teacher collaboration to adult learning, instructional practice, student learning, and individual and collective efficacy beliefs (Rosenholtz, 1989; Ross, Hogaboam-Gray, & Gray, 2004; Goddard, Goddard, & Tschannen-Moran, 2007; Louis, Mayrowetz, Smiley, & Murphy, 2009).

Because challenges like whole-school improvement require *organizational* responses, they depend not only on the knowledge and skill of the people in the organizations but on the integrative structures and processes of those organizations for their success (Honig & Hatch, 2004; Childress et al., 2007a; 2007b). The literature on organizational learning stresses the importance of integrative structures at the top of the organization (what we call “whole-school processes”) as places where competing views and interests can be negotiated and resolved, but it highlights group-level structures (what we call “team processes”) as places where knowledge is created, stored and used (Edmondson, 2002; Crossen & Berdrow, 2003). In pilot phases of the ICAP, we discovered that teachers have different perceptions of organizational processes that occur at the whole-school and team levels, leading us to separate these domains on the IC survey.

Domain 2: Whole-school Processes for Instructional Improvement encompasses the schools’ improvement strategy, teachers’ involvement in instructional decisions, and shared understanding of effective practice.

Collaboration around an improvement strategy. At the whole-school level, organizational processes serve to align resources and practices to meet improvement goals, while collectively monitoring progress and responding to learning needs in an ongoing fashion. In schools with high levels of IC, whole-school processes are closely aligned with the improvement strategy. The tightness of the relationship between organizational processes and the improvement strategy is reflected by the degree to which teachers feel improvement goals in the organization are realistic, measurable, and aligned with the programs, initiatives, and curriculum that are in place (Newmann et al., 2001). Whole-school processes serve to monitor the progress of these programs and initiatives and create a structure for sharing information when changes are needed.

Teachers' involvement in instructional decisions. Whole-school processes also enable collective involvement of teachers in the improvement process, involvement that is associated with higher student achievement in both math and reading (Goddard et al., 2007). Teachers' collective work related to the core function of schools, teaching and learning, exemplifies the *shared* vision of instructional leadership (Marks & Printy, 2003). In schools with high levels of IC, teachers work collectively to develop improvement strategies, evaluate curricular and assessment materials, and design professional development experiences that are tailored to teachers' learning needs.

Domain 3: Teams as Levers for Instructional Improvement encompasses teams' shared understanding of effective practice, leadership support for teams, and the use of strategic team practices.

Shared understanding of effective practice. In order to enact an improvement strategy, team members should have similar understandings of effective instruction. This might also be described as having a shared understanding of direction or a common purpose related to instruction (DuFour & Eaker, 1998; Hackman, 2002; Katzenbach & Smith, 1993). The processes that support teacher collaboration can also foster a shared understanding of effective instruction. The interactive processes of interpreting student data, including student work and assessment results, visiting each others' classrooms, and evaluating specific instructional strategies or resources can support shared beliefs about effective instruction (Boudett, City, & Murnane, 2005; Coburn, 2001; Coburn & Talbert, 2006). Regardless of the specific process schools use to move student and adult learning out of the privacy of the classroom and into the public spaces of the organization (City et al., 2009), this culture-building exercise is a critical component of building coherence and improving collective practice.

Support for team. School leaders also play an important role in making teacher collaboration possible by supporting the work of teacher teams. The process of interpreting student data, discussing instruction, and coming to shared understanding is a complex task that requires adequate time for productive discussion (Coburn, 2001; Coburn et al., 2009; Coburn & Turner, 2011; Ingram, Louis, & Schroeder, 2004).

Principals support this work by providing adequate time to meet, providing a compelling direction for team work, giving teams autonomy to act on the decisions made by the group, and holding them accountable for following through with these decisions (Hackman, 2002).

Team processes. When teachers work in teams that engage in instructional dialogue (Little, 2002) or inquiry into practice, teachers see more direct causal connections between their actions and student learning (Gallimore, Ermeling, Saunders, & Goldenberg, 2009). Specific processes that make this learning cycle possible include following a clear agenda that is connected to goals for team work, active contribution by all team members, and horizontal accountability for implementing team decisions (Hackman, 2002; Katzenbach & Smith, 2003; Troen & Boles, 2012).

Domain 4: Individual and Collective Efficacy Beliefs

As a result of their collective experiences, teachers develop beliefs about their efficacy in supporting student learning. The efficacy domain builds upon social-cognitive theory, which identifies past mastery experience as the most potent driver of efficacy beliefs (Bandura, 1997): past mastery has been demonstrated to explain roughly two-thirds of the variance in collective efficacy levels among faculty in schools (Goddard, 2001). Efficacy scholarship in education has heretofore limited the proxy for mastery experience to the achievement of students on standardized exams in prior years (Bandura, 1993; Bandura, 1997; Goddard et al., 2000; Ross, 1998; Ross et al., 2004), reducing the usefulness of the construct to the field of school reform. The IC framework and emergent efficacy

scholarship reframe mastery experience as enactive mastery in the present tense, or the experiences generated by the ongoing, shared interactions among principals and faculty in schools (Goddard et al., in press; SERP, 2011). Therefore, school leaders can target the malleable, organizational features of schools as drivers of collective efficacy.

Individual teacher efficacy. A teacher's expectation that he or she will be able to bring about student learning is a well-established predictor of teaching behaviors that foster academic achievement (e.g., Gibson & Dembo, 1984; Hoy et al., 2003). These behaviors include a willingness to undertake classroom experimentation and innovation, particularly with regard to techniques that are difficult to implement and involve risks such as sharing control with students. High-efficacy teachers try harder, use management strategies that stimulate student autonomy, attend more closely to low-ability student needs and modify students' ability perceptions. Not surprisingly, these behaviors result in higher student achievement in both core academic subjects and in affective goals like motivation and self-esteem (Ross et al., 1998; Ross et al., 2004).

Collective efficacy. In contrast, collective efficacy treats schools, rather than individual teachers, as the unit of analysis. Collective efficacy is a measure of group-referent efficacy beliefs, or the degree to which teachers believe “the faculty as a whole can organize and execute the courses of action required to have a positive effect on students” (Goddard et al., 2004, p. 4). The stronger a group’s perception of its collective capability to attain a given goal the more likely they are to pursue that goal and put forth the effort necessary to achieve success (Goddard et al., 2004; Bandura, 1997). Efficacy scholars

argue that levels of collective efficacy beliefs affect the degree of effort, creativity, and persistence of individual members toward collective rather than individual goals, and influence individuals' commitment to collaborate with others in their pursuit (Bandura, 1997; Takahashi, 2011).

The power of collective efficacy perceptions to influence the organizational life of a school lies in the socially transmitted expectations for action, or *normative press* (Sampson, Morenoff, & Earls, 1999). In schools with high levels of perceived collective efficacy, teachers learn that extra effort and educational success are the norm. These expectations for action create a normative press that encourages all teachers to do what it takes to excel and discourages them from giving up when faced with difficult obstacles (Goddard et al., 2004). While aggregate measures of individual efficacy beliefs do not vary greatly across schools, aggregate measures of collective capability do vary greatly across schools (Goddard et al., 2004). Collective efficacy repeatedly emerges in research as a powerful predictor of student achievement, able to offset the effect of student demographic variables and explain high proportions of between-school variance in student achievement across a variety of grades and subjects (Goddard, 2001; Goddard, et al., 2003; Goddard et al., 2004; Goddard et al., 2007; Ross et al., 2004).

The IC framework focuses on both individual and collective efficacy because, as a matter of organizational development, individuals "learn" the effects of their practice on students both by reflecting on their independent work in classrooms and by working collaboratively on common instructional goals. We presume an ongoing, reciprocal

growth process between individual and collective efficacy beliefs as the leadership and organizational domains of internal coherence improve (c.f., Goddard & Goddard, 2001). As faculty collaboration becomes more effective and more tightly linked to instruction and student learning, opportunities for individual teachers to augment their instructional repertoires and confidence in their abilities increase (Rosenholtz, 1989; Ross et al., 2004). Should improved classroom practice lead to improvements in student achievement, schools will have positive collective enactive experiences, one of the most powerful sources of efficacy-shaping information (Bandura, 1997).

Importantly, although there are survey items about individual and collective efficacy beliefs in the ICAP, the IC professional development approach does not attempt to directly influence efficacy beliefs. They are included in the survey to provide a snapshot of existing levels of these attributes at a given school, as part of the diagnostic profile that informs professional development to build IC. However, efficacy beliefs serve as proximal outcomes, and we propose that professional development should focus on the leadership practices and whole-school and team organizational processes that will generate real improvements to teachers' collective learning about strong instructional practice. These changes to practice should, in turn, create mastery experiences for teachers that will strengthen both their individual and collective efficacy beliefs (Moolenaar et al., 2012; Puchner & Taylor 2006; Tschannen-Moran & Johnson, 2011).

Discussion and conclusion

We consider a school to be high in IC to the extent that it is able to capitalize on resources internal or external to the organization for powerful, collective ends. IC is a school's ability to function as a unified organization, rather than a group of atomized practitioners, around its core function of teaching and learning. Although schools low in IC may possess pockets of excellence or individual teachers who can implement an intervention with strong results, they will be unable to affect whole-school improvement because they lack the capacity to muster an *organizational* response to the impetus to reform.

Focusing on internal coherence places the center of improvement work *in* schools. The IC Project's diagnostic and professional development model is designed to engage practitioners in an analysis of the conditions of their own organizations, and the processes by which they can build sustained learning environments within them. In other words, the goal of the IC professional development is to use ICAP data to enhance the ability of leaders at the school and system levels to create the conditions necessary for educators to engage in the continuous improvement.

Research on various attempts to “turn around” low-performing schools suggests that there are no quick fixes (Mintrop, 2004; O’Day, 2002). The causes of low-performance are deeply rooted in the beliefs, knowledge, and skill of adults, in the content and pedagogy present in classrooms, and in the organizational processes by which educators decide how to coordinate their work. In most instances, the patterns of practice that are producing low performance are invisible to the people who work in low-performing

schools, even when they acknowledge the need for improvement. Challenges like whole-school improvement require organizational responses, and therefore their success depends not only on the knowledge and skill of the people in the organizations but also on the integrative structures and processes of those organizations (Honig & Hatch, 2004; Childress et al., 2007a; 2007b). Despite the fact that many school systems devote extensive resources to creating the structures of collaboration—such as shared teacher time, vertical and horizontal teaming, and leadership teams—practitioners frequently lack the skills and processes to capitalize on their time within these structures for powerful ends.

In the long term, we anticipate that, over time, the effects of the IC professional development will include increased levels of individual and collective efficacy among faculty for the work of school improvement, and functional leadership teams operating within treatment schools. In turn, we expect improved student learning and the closing of achievement gaps. Given these goals, there are several avenues for future research and clinical practice in building IC.

One promising avenue is to support future empirical research to quantitatively examine proposed outcomes, which include 1) growth on the indicators in each domain of IC, as measured by the ICAP; 2) mean gains in student achievement, and 3) closing of achievement gaps by race/ethnicity and socioeconomic status. We expect that the focused school improvement efforts will yield growth in organizational capacity evidenced by positive change in the leadership, organizational process, and efficacy domains measured

through the ICAP. Based on preliminary pilot work, we anticipate that the school leadership teams will elect to focus improvement efforts on student performance indicators. Therefore, we expect these enhancements in organizational capacity to lead to improved outcomes in terms of student achievement and closing of achievement gaps.

Another avenue of proposed empirical research is to create case studies to qualitatively understand the mechanisms behind the development of IC. Such studies might explore how educators develop along the domains of the IC framework, how they mobilize resources and make decisions around school improvement efforts, or how they perceive the impact of IC work on their sense of individual and collective efficacy. Such studies that explore how organizations build and sustain a culture of instructional improvement will be of high value and direct relevance to schools seeking guidance for their approach to school improvement.

Finally, there are avenues to further develop the clinical support component and investigate how this research translates into tools and instruments that are useful and relevant to educators. The IC project has implications for the work of system leaders, principals, and leadership teams. As such, future work might further develop the associated curricular materials, activities, and training models able to turn research into useable knowledge for practitioners.

In the IC Project, we present schools with their IC profile during professional development to introduce practitioners to the organizational attributes critical for whole-

school improvement and to foster their understanding of their current capacity to engage in this work. Without this organizational capacity, not even the most powerful instructional intervention will result in improved outcomes at the school level. External pressure to improve or the threat of sanctions will similarly fail to drive improvements in schools unable to harness the collective resources of the organization to achieve collective goals. By instead supporting schools' IC, we assess, analyze, and support their capacity to continuously grow, adapt, and increase their knowledge, skill, and integrative functions over time.

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Figure 1. Internal Coherence Framework

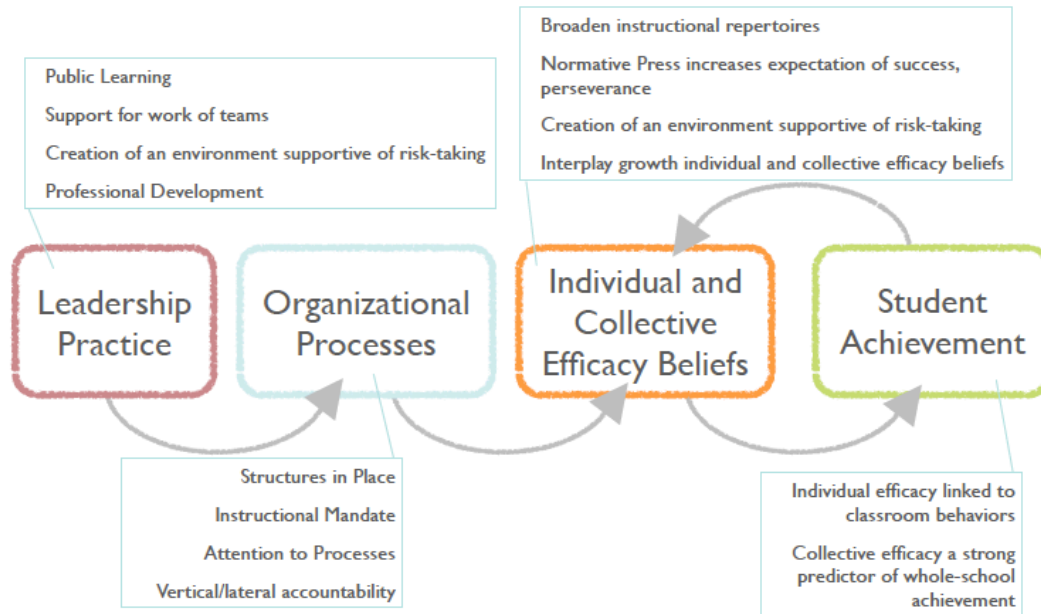


Figure 1. Internal Coherence Framework displaying the relationships between the Leadership Practices for Instructional Improvement, Organizational Processes, and Efficacy Beliefs domains and their connection to student achievement. From “Building Coherence within Schools,” by R. F. Elmore & M. L. Forman, 2011, retrieved December 18, 2013 from the Strategic Education Research Partnership Website: <http://ic.serpmedia.org>.

Appendix A

Internal Coherence Survey Domains and Factors

Domain 1: Leadership for Instructional Improvement

Factor 1: Leadership for Learning

The principal at this school invites input from faculty in discussions about teaching and learning.

The principal at this school asks probing questions about teaching and learning.

The principal at this school listens attentively.

The principal at this school encourages multiple points of view.

The principal at this school acknowledges his / her own limitations with respect to knowledge or expertise.

The principal at this school is knowledgeable about effective instructional practices.

The principal communicates a clear vision for teaching and learning at our school.

The principal at this school is directly involved in helping teachers address instructional issues in their classrooms.

Factor 2: Psychological Safety

People in this school are eager to share information about what does and does not work. Making mistakes is considered part of the learning process in our school.

If I make a mistake at this school, it will not be held against me.

In this school, teachers feel comfortable experimenting with untried teaching approaches, even if they may not work.

In this school, it is easy to speak up about what is on your mind.

People in this school are usually comfortable talking about problems and disagreements about teaching and learning.

Factor 4: Professional Development

My professional development experiences this year have been closely connected to my school's improvement plan.

My professional development experiences this year have included enough time to think carefully about, try, and evaluate new ideas.

My professional development experiences this year have been valuable to my practice as a teacher.

My professional development experiences this year have been designed in response to the learning needs of the faculty, as they emerge.

My professional development experiences this year have included follow-up support as we implement what we have learned.

Domain II: Whole-school Processes for Instructional Improvement

Factor 1: Collaboration around an Improvement Strategy

Our school has an improvement plan, of which we are all aware.

We focus our whole-school improvement efforts on clear, concrete steps.

We coordinate curriculum, instruction and learning materials with our school improvement plan.

The programs or initiatives we implement connect clearly to our school improvement plan.

Factor 2: Teachers' Involvement in Instructional Decisions

Teachers in this school work collectively to plan school improvement.

Teachers in this school work collectively to select instructional methods and activities.

Teachers in this school work collectively to evaluate curriculum and programs.

Teachers in this school work collectively to determine professional development needs and goals.

Teachers in this school work collectively to plan professional development activities.

As a full faculty, we work toward developing a shared understanding of effective instructional practices.

As a full faculty, we regularly revisit and revise our thinking about the most effective instructional practices we can use with our students.

Domain III: Teams as Levers for Instructional Improvement

Factor 4: Shared Understanding of Effective Practice (Team)

How often have you worked with members of your team to discuss teaching decisions based on student work?

How often have you worked with members of your team to discuss teaching decisions based on student assessment data?

How often have you worked with members of your team to evaluate curricular or assessment materials?

How often have you worked with members of your team to discuss lesson plans or specific instructional practices?

Factor 5: Support for Team

The principal at this school provides teacher teams with the right balance of direction and independence.

The principal at this school gives teacher teams a clear and meaningful purpose for their time together.

The principal at this school provides adequate time for teacher teams to meet.

The principal at this school ensures that teacher meeting time is protected and maintained consistently throughout the year.

The principal at this school supports teacher teams in following through on instructional decisions made by the group.

Factor 6: Team Processes

Our team meetings have an agenda, which we do our best to follow.

There is always someone who has the responsibility of guiding or facilitating our team discussions.

When our team makes a decision, all teachers on the team take responsibility for following through.

Our team meetings include productive debate.

All members of the team are actively involved in our collective learning.

Team meetings connect to each other and the overarching purpose for team work.

There is a clear connection between our team's work and the school improvement plan.

Domain IV: Teachers' Efficacy Beliefs

Factor 1: Individual Efficacy

How confident are you that you can craft good questions for your students?

How confident are you that you can use a variety of assessment strategies?

How confident are you that you can provide an alternative explanation or example when students are confused?

How confident are you that you can provide appropriate challenges for very capable students?

How confident are you that you can differentiate instruction for individual students?

Factor 2: Collective Efficacy

Teachers in this school are confident they will be able to motivate their students.

Teachers in this school have the skills needed to produce meaningful student learning.

If a child doesn't learn something the first time, teachers will try another way.

Teachers in this school believe that every child can learn.

Teachers in this school are skilled in various methods of teaching.

Teachers in this school have what it takes explore new instructional approaches to help underperforming students meet standards.