The Instructional Practices Inventory in Rural Settings: Testing the Student Engagement-Standardized Test Performance Relationship

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Author's Note: This is a working paper. We realize it is in a rather rough draft format. That was the best we could do given the time frame for preparation prior to the conference. Also, note that this is a pre-publication draft. We plan to refine this draft and submit it for publication in the coming months. Thank you for your understanding of this work in progress.

Abstract

Prior student engagement studies involving the Instructional Practices Inventory (IPI) have demonstrated a strong relationship between lower-order student engagement levels and the standardized achievement levels of Missouri public schools. This study considered the relationship between lower-order student engagement levels and the resulting standardized performance levels of exclusively rural school districts across Missouri. Using both schools' IPI student engagement data and the corresponding school culture data from the IPI Survey Questionnaire, relationships between lower-order student engagement and student achievement levels were quantitatively interrogated. Additionally, the relationship between the educational input levels with student achievement, student engagement, and school culture were all empirical propositions that were explored in the study.

The data tested in both Hierarchical Linear Models and measurement modeling yielded several significant findings. Lower-order thinking levels within rural schools appear to be less impactful on standardized achievement levels than the wider state population sample. Moreover, the effectiveness of the IPI on school culture appears to be less potent in these rural schools. Finally, very strong relationships were evidenced between educational inputs and student achievement and student engagement levels, suggesting that the proportion of students receiving free and reduced lunch ("FRL") within a school population greatly impacts not only the standardized achievement levels of rural schools, but also the extent to which instructional initiatives gain traction at the site level.

Introduction

It is not easy being an administrator or teacher in today's public school system. Unfortunately, rural school leaders face additional challenges and impediments not encountered by other districts. Most rural schools have very low enrollment numbers and very high poverty levels. This presents a two-front battle for the rural principal: she must contend with scale issues in which per student costs can be remarkably greater while also addressing the many challenges associated with educating students from impoverished backgrounds.

Rural principals and teacher leaders are presented with an ironic upside to school reform and effectiveness efforts: size. The very factor that contributes to great financial pressure can also be the rural school leaders greatest asset. The small size of most rural school's provides a physical setting to more quickly and materially enact meaningfully building level changes. The psychological challenges associated with the task are also a bit less daunting in schools that enroll far less than 1,000 students. Rural principals are able to gauge and sway teacher efficacy levels over short time horizons. Additionally, monitoring and altering student engagement behaviors across rural school classrooms becomes a more controllable undertaking in rural settings.

The findings of this study, like the factors involved in rural education, provide a mixed prognosis: it is clear that rural educators unique fiscal and student demographic challenges can yield school input-output relationships that are more clearly predicated on school funding, teacher characteristics, and socioeconomic status. Conversely, the more intimate faculty and administrative relationships present the opportunity to undertake school improvement and reform efforts with greater faculty buy-in and traction. All told, rural school leaders, and state and federal policymakers should heed findings from the study that again reaffirm that all schools are not created equal.

Effective Schooling

Differences that emerge between rural schools and those schools that are located in more populous regions might be contribute to, or be attributable to, the idiosyncratic nature of the school reform efforts within these regions. Such school effectiveness initiatives are not created equal among regions across the state. For instance, cash-strapped rural school districts are not likely to have the funds to indefinitely allocate discretionary resources to such school improvement initiatives. No conclusive empirical evidence exists to demonstrate a nexus between educational inputs and student performance (Rice, 2004). Resource variables, such as teacher salaries and student-teacher ratios, have, in some studies, been demonstrated to exact significant effects on achievement (Rumberger & Palardy, 2005). While this might facially appear to be inconsistent with Hanuschek's (1986; 1995; 1996) and Rice's (2004) work, it suggests that resource allocation, rather than the magnitude of absolute funding levels, influences school performance levels.

In the pronounced accountability era, in which schools are subjected to increasingly demanding expectations without receiving proportionate funding, school leaders have little choice but to make the most effective use of the resources and faculty that presently exist. The general public and educational practitioners alike deem those schools that are able to demonstrate robust standardized test performance with little, if any, additional funding as more effective schools. Education policymakers and administrators have been keenly interested in promoting and achieving effective schooling for some time (Rumberger & Palardy, 2005). It is, therefore, worthwhile to consider which characteristics across effective schools are pervasive and transcend the more distinctive student characteristics that influence individual and school-wide achievement.

The school effectiveness movement has been a reaction to resource and student input models of education. (Caldas & Bankston, 1999). There is value in using multiple indicators to assess school performance, as some schools perform better on some such indicators than on

others (Rumberger & Palardy, 2005). Studies have found, for instance, that effective schools are often the site of team learning (Thornton, Shepperson, & Canavero, 2007). Effective schools also appear to be equipped with leadership that is able to "successfully convert information into action" (Thornton, et al., 2007, p. 54).

School improvement initiatives that seek to enhance school effectiveness and student achievement are found to be more likely to succeed when teacher control (Moe & Chubb, 1990; Witte & Walsh, 1990) and parental involvement (Henderson et al., 2005; Witte & Walsh, 1990) are evidenced. Furthermore, effective schools have been found to enjoy wider discretion and control over staff decision-making (Moe & Chubb, 1990). This is not to suggest that school leaders or teachers should necessarily be given unfettered autonomy, as a certain degree of structure and disciplined leadership provides appropriate guidance for schools (Moe & Chubb, 1990). Indeed, effective schools commonly contain strong leadership, clear classroom objectives that are frequently monitored, and a climate that is characterized by the expectation that all children can learn (Druian & Butler, 1987).

The components that comprise effective schools are both pecuniary as well as nonfinancial in nature. Beach and Lindahl (2007) suggest as much, as they cite Fullan (1991), who noted that "those organizations whose cultures are compatible with change and those who have sufficient facilities, equipment, materials and supplies to implement the change, and those who are not undergoing other major change efforts or crises are more likely to be successful in implementing the desired change" (p. 32). A school wide vision that is congruent with the instructional goals and resources of schools is also vitally important (Cuban, 1998). Promising research conducted by Koch (1999) suggests that only a minimal funding threshold must be surpassed to allow for the enactment of programs and curricular initiatives associated with effective schooling. This is not to suggest, however, that nonfinancial factors do not greatly impact the quality of schools (Clemmitt, 2007).

An emphasis on excellence and strong, intense levels of student and teacher commitment has been found to be effective in educating the at-risk students (Druian & Butler, 1987). Wilson (2007) further finds, for instance, that "remarkable schools across our nation have vision[s] of producing future citizens who are creative, inspired, and curious, and who believe in themselves, and who can engage in inquiry, solve problems, and create art, literature and inventions" (Wilson, 2007, p. 43). The vigor with which effective school movements are pursued can become excessive, however. More specifically, overzealous efforts to achieve bottom line achievement results can generate negative results such as greater academic stratification of students with fewer choices and more demands on the time requirements of students who are already overly-taxed by their demanding schedules (Druian & Butler, 1987). Student dropout rates can be a byproduct of the unfairness and inequity inherent in certain effective school movements, as well (Druian & Butler, 1987).

Most school leaders who seek to create and maintain effective and high-performing schools develop specific and ambitious organizational goals (Hargreaves, 2007; Leithwood, Menzies, & Jantzi, 1994; Moe & Chubb, 1990). Establishing clearly defined goals enables school leaders to incorporate benchmarks that allow them to distinguish the current operational integrity of the school from their desired performance objectives. Leithwood, Menzies, and Jantzi (1994) argue that "goals energize action only when a teacher's evaluation of present circumstances indicates that it is different from the desired state" (p. 43). Leithwood, Menzies,

and Jantzi (1994) further suggest that goals will be most effective if they are believed to be achievable, clear, and concise. This goal setting process should also be highly participatory, ongoing, and continuous (Leithwood, Menzies, & Jantzi, 1994). When teachers' goals were congruent with their perceptions of the school's culture and direction, schools were found to be more likely to enjoy success (Leithwood, Menzies, & Jantzi, 1994).

School leaders must distinguish between those short term goals which reflect more pressing priorities and certain longer term goals that cannot be achieved as expediently (Hargreaves, 2007). While short term goals, oftentimes indistinguishable from "quick-fix" initiatives, are *en vogue* in the current political climate, long-term goals provide the structure and guidance needed for school leaders to establish more effective schools (Hargreaves, 2007). Leithwood, Menzies, and Jantzi (1994) caution, however, that "goals energize action only when a teacher's evaluation of present circumstances indicates that it is different form the desired state" (p. 43).

Attempts to determine whether certain commonalities exist across effective schools might enable the researcher to find generalizable prescriptions that rural school leaders can incorporate within their buildings in the quest to introduce more effective school practices within their educational setting. Miles and Darling-Hammond (1998) note that from a selected population of effective high schools it was determined that flexible student grouping, efforts to create personal relationships, larger and more varied blocks of instructional time, more common planning time, and the creative definition of staff roles and school workdays were common among the effective schools. This sample of effective schools also contained leaders who directly challenged policies, regulations, and collective bargaining agreements. Hargreaves (2007) further suggests several strategic solutions that school leaders might find helpful in their quest to become more effective, which include: 1) establishing correct valuation 2) developing sustainable growth rates 3) remaining ethically consistent 4) balancing investments 5) prioritizing their planning 6) broadening the language and vision of their goals 7) creating intermediate indicators to track goal progress 8) reducing **"**initiativitis," and 9) building change efforts and goals from the bottom with an appropriate level of guidance from the top.

A school's faculty is ultimately responsible for undertaking and sustaining school change and improvement initiatives. Faculty perception of their ability to effect change within the school can impact the actual extent to which change is realized (Hoy, Tarter, & Hoy, 2006). Consequently, it is important that such faculty perceive themselves as stakeholders who must act cooperatively with others within the school (Leithwood, Menzies, & Jantzi, 1994; Miles & Darling-Hammond, 1998). This faculty cooperation and collective self efficacy is enhanced when the school personnel possess knowledge of their performance and are subjected to positive verbal reinforcement (Leithwood, Menzies, & Jantzi, 1994). As ambitious teachers who seek to affect school change oftentimes deem themselves to be change agents, tangible results can materialize from such self-perceptions (Leithwood, Menzies, & Jantzi, 1994). Additionally, faculty perception that human resources needs are met, that the climate of the school is supportive, and that such a climate is caring and trusting are also important components associated with affecting positive change in schools (Leithwood, Menzies, & Jantzi, 1994; Miles & Darling-Hammond, 1998). Ultimately, find Miles and Darling-Hammond (1998), effective schools have the structures in place to support more personal relationships, have more common planning time for faculty, and have a creative definition of staff roles and the workday.

Organizational Learning

Rural schools typically enroll less students than schools in other regions of the state. Rural schools might, therefore, offer more intimate environments in which to forge the wider community relationships that provide sustained support for instructional initiatives. Salient research concerns surround underlying empirical considerations of organizational learning. The structural form under which rural schools are situated in the wider community environment might, for instance, influence the nature and extent of organizational learning. Organizational learning that is stimulated by leadership that is heavily goal-orientated will likely be guided by hard data and information. The simple proclamation of collaboration or a shared vision, without accompanying action, amounts to little more than empty rhetoric. Within organizations such as schools, it is vitally important that a culture exists in which the preparation for environmental challenges incorporates the non-human systems, structures, and strategies associated with knowledge storage (Bontis et al., 2002). A "one-size fits all" prescription for any such organizational environment, rural schools included, is not desirable.

Schools are often deemed to be unwieldy and irrational bureaucracies. Feldman and March (1981) argue, however, that it is the modern bureaucratic structure that allows for the "systematic application of information and decisions…" (p. 177). The frenetic nature of organizational change nevertheless requires an institutional form that is lean enough to expediently respond to such a fluid environment. Griffith (2003) suggests, for instance, that "the nature of the interface between the school and the larger system must also be assessed, especially those exchanges that pose hurdles in the efforts by the school to function in new and creative ways" (p. 206). While schools are historically viewed as relatively inert institutional forms, they might resemble what have termed to be "analyzer organizations." Such analyzer organizations contain leaders who are concerned with retaining an insular core of activities that allow for organizational stability, while occasionally attempting innovative initiates when either the environment permits or demands such organizational experimentation (Daft & Weick, 1984).

It is not uncommon to find education researchers inclined to characterize school change and organizational learning attempts as little more than misguided fads. Kraatz and Zajac (2001) suggest that such "opportunistic adaptation" is indeed a familiar concept to organizational leaders. Opportunistic adaptation, note Kraatz and Zajac (2001), is largely a consequence of the neglectful consideration of the competencies or objectives of the organization. In the present accountability era, rash administrative attempts to foster high-stakes initiatives can quickly become the paramount objective within schools. Such prioritization comes at the expense of teacher creativity, and hence, at the wider organizational learning that can be geared toward meeting the needs of children (Bowen et al., 2007).

As rural school leaders begin to question how to best affect the school environment, such considerations should focus on how best to "substantially improve outcomes for students or another target group in the school" (Griffith, 2003, p. 244). This interrogation of educational practices will intimately affect teachers (Knight, 2002). Teachers, therefore, can assume the role of school leaders and play an integral part in organizational learning and change. Such school leaders are the "…first to act according to the new rules, thus paving the way for them to be institutionalized for the whole organization" (Buchel & Probst 2000, p. 5). After all, notes Moon (2000), organizational members must identify with the organization, be willing to do extra work, and ultimately remain loyal to their organizations. Organizational theory alone can be

actionable, however, as “theory allows practitioners to explicitly reflect upon and actively experiment with their practice interventions” (Raelin, 1997, p. 565). It would be valuable for the researcher to consider the extent to which organizational learning is nested within the institution, simultaneously occurring at several distinct but interrelated levels within an organization (Levinthal & March, 1993).

Just as the complexity and membership distribution between organizations is disparate and can lead to varying degrees of organizational effectiveness, so too does the power that organizations wield vary considerably. For instance, large corporations that wield impressive market share possess a kind of leverage that enables them to manipulate the external environment, altering the very operating landscape in which they function. Conversely, small organizations such as rural schools are largely impotent in the face of these external demands, and must instead comply with, rather than attempt to control, such environments. Furthermore, the vagaries of the public education arena would make the traditional notion of organizations as being “turned into frenzies of experimentation, change, and innovation by a dynamic of failure” entirely appropriate to public education (Levinthal & March, 1993, p. 105). Indeed, performance expectations and benchmarks are subjectively interpreted by stakeholders, be they shareholders in the private sector or taxpayers in public sector for organizations such as schools (Marks & Louis, 1999). Finally, much like private sector firms that enjoy first-mover success often compel imitation from their competitors, such organizational learning also occurs in the public sector and can prove to be a boon to organizations such as public schools (Marks & Louis, 1999).

The interplay between internal organizational practices and the external environment can influence such practices and may affect the extent to which change efforts are undertaken. Feldman (2000) writes that “change in organizations does not simply consist of responses to the external environment, but also consists of internally generated knowledge” (p. 625). Presumably, the external environment signals the need for organizational efforts to collect knowledge and information that will expedite change initiatives. As individuals’ knowledge levels change, they can adjust their actions accordingly (Feldman, 2000). Any change initiatives within rural schools that are forced by administrative mandate, as opposed to more autonomous participation, can lead to certain unintended consequences that can harm the organization. For instance, certain organizational employees within schools who are familiar with those long-standing processes that have helped to anchor the organizational functioning over time might become disenchanted with such directives and leave the organization (Woodman et al., 1993). Instead, administrators who allow for divergent thinking while undertaking change efforts can stimulate employee creativity (Woodman et al., 1993). Ultimately, write Kraatz and Zajac (2001), “there is a fine and uncertain line between prudently protecting and exploiting existing competencies and falling into a competency trap” (p. 654).

Organizational members who acknowledge the many operational pressures they will be forced to confront, and who seek change imperatives that will ensure that organizational learning allows for organizational evolution, will likely enjoy greater success than those who neglect or actively disregard such an operational reality. Indeed, a meaningful distinction can be made between lower-level organizational learning, which entails following pre-existing routines and standard operating procedures, from the higher-level learning that entails adjusting such routines based on skill development and insight (Fiol & Lyles, 1985). Furthermore, organizational learning is not synonymous with organizational change (Fiol & Lyles, 1985). Therefore, well-

intentioned rural school leaders are not guaranteed to produce meaningful advancements in organizational learning. In short, the nature and scope of organizational learning is largely, if not entirely, dependent upon the greater external environment in which these organizations function. In an age of global interdependence, rural schools are affected and challenged by such an environment to as great an extent as are any other public schools within the state. It would strain credulity to suggest that as the wider exogenous environment is prone to exponential advances and radical change, schools are inoculated from such turbulence and remain largely stable.

School Leadership

Similar degrees of organizational autonomy can be had by leaders in rural and urban public schools. Although counter intuitive, it is nevertheless the case that the current accountability era necessitates a heightened degree of school-level administrative discretion in the public school setting. As rural school leaders exercise authority at the building level, they dictate the level of autonomy and discretion that teachers are able to exercise. Thornton et al. (2007) suggest as much, noting that leaders must facilitate a shared vision within organizations, which becomes especially important at the school level. School leaders are often the primary actors designated to modify a school's climate and culture as they attempt school reform or improvement initiatives that target the attainment of heightened levels of building-level effectiveness (Henderson et al., 2005). To accomplish such an ambitious task, these leaders must establish and clarify the school's shared beliefs and values, while also demonstrating how such values exhibit congruency with the proposed changes (Beach & Lindahl, 2007).

Attempts to improve school performance are ultimately driven by the underlying goals enacted by school leaders (Leithwood, Menzies, & Jantzi, 1994). Appropriate goal-setting within schools requires both information about the current quality of classroom instruction and the establishment of benchmarks which capture how to best remedy any detected deficiencies. Such goals are unlikely to be realized in the absence of leadership which is able to secure the commitment of all stakeholders within the school (Leithwood, Menzies, & Jantzi, 1994). As performance evaluations continue to be the primary mechanism by which to hold teachers and schools accountable, this process often fails to provide meaningful information about the school-level quality of instruction (Skretta, 2007; Valentine, 2005; 2007; 2008).

The necessity of a strong leadership presence, as required by the organizational need for constant review, re-evaluation, and short-term stability, has been well established in the educational research literature (Darling-Hammond, Bullmaster, & Cobb, 1995). School leaders who exercise appropriate leadership can prove to be an invaluable component in guiding a school through the arduous process of reform and improvement (Hargreaves, 2007; Leithwood, Menzies, & Jantzi, 1994). Such leadership requires both rationality and sufficient transparency associated with the corresponding decision making process to diminish the likelihood that it will be viewed as arbitrary or capricious by faculty within the school **(**Leithwood, Menzies, & Jantzi, 1994 ; Yukl, 2006). It is important that such leadership authority, whether technical, managerial, or rational be viewed as legitimate and necessary (Henderson et al., 2005; Leithwood et al., 1976; Yukl, 2006). Leithwood et al. (1976) further elucidate the characteristics of legitimate leadership authority, which he suggests are evidenced by individuals who 1) foreshadow the impending change, 2) distribute authority among peer representatives, 3) train clients to cope with change, 4) invoke the need to enact successive changes, and 5) highlight merits of change

and answer questions. Little reason exists to suggest that these findings are not as applicable to rural schools as to any other educational setting.

The role of the principal within the school's administrative team is vital and irreplaceable. Indeed, it is the principal who staves off the external demands placed upon the school (Henderson et al., 2005; Hoy, Tarter & Hoy, 2006; Valentine, 2005; 2007; 2008). Furthermore, principals can directly influence the organizational health of a school, which might be as much a determinant as to whether the school is effective as is the demographic composition of the school's population (Henderson et al., 2005).

Teachers also play an instrumental role in the school reform and improvement efforts. Teachers, whether intentionally or unintentionally, modify the curricula and mandates of schools even if they are tightly prescribed (Leithwood, Menzies, & Jantzi, 1994). Leithwood et al. (1976) delineate the five stages of his proposed curriculum change model: 1) diagnosing the context for change, 2) developing the seminal organization, 3) developing working organizations, 4) defining general problems and goals, and 5)generating strategies for implementing general goals with clients. Furthermore, Darling-Hammond et al (1995) found in their case study research that teachers "have opportunities to learn by teaching, learn by engaging in restructuring, learn by collaborating" (p. 91).

Finding a common thread among the characteristics of successful schools and the qualities of the leaders within these schools can be studied with the intention of eventually replicating these school reform attempts (Wilson, 2007). As such, the common features of effective, successful schools have been empirically ascertained (Wilson, 2007). Beach and Lindahl (2007) note that managerially-led strategic planning has dominated school agendas over the last two decades. Such strategic initiatives need not represent radical and rash efforts to enact change. Instead, incremental attempts at accomplishing reform objectives, in which initiatives are rudimentary in scope, can lead to higher faculty confidence levels (Leithwood, Menzies, & Jantzi, 1994; Wilson, 2007). Indeed, the implementation of improvement plans are oftentimes designed to meet a 3-5 year implementation effort (Ferrara, 2007). Rural schools that possess the resources might be endowed with great levels of social capital by which they can sustain lasting efforts at school improvement.

School leaders need to be cognizant of the possibility of mission drift over such a prolonged period, however (Wilson, 2007). The importance of relationship building and teacher empowerment has also been found to be commonplace among high achieving schools (Wilson, 2007). School structuring efforts are often implemented by school leaders as they attempt to enact school-wide change, as these leaders focus on the 1) curriculum, 2) school decision-making structures, 3) focus of leadership, 4) site based management, and 5) stakeholder empowerment (Leithwood, Menzies, & Jantzi, 1994).

The school improvement initiatives undertaken in rural regions require as much involvement from teachers as from the schools' administrative teams. Darling-Hammond et al. (1995) suggest that teacher leadership is inextricably linked to teacher learning. Certain leadership qualities can be manifested in various tasks and roles that are not hierarchical and will make teachers more responsive to students (Darling-Hammond et al., 1995). An adequate degree of teacher commitment cannot be assumed to exist; rather such commitment must be earned over time (Leithwood, Menzies, & Jantzi, 1994).

Student Tracking Practices

While the tracking practices of rural schools might not differ radically from other regions across Missouri, the socioeconomic composition and prior educational experiences of these students may be considerably distinguishable from suburban students. Not surprisingly, the nature and quality of instruction in high and low-track classrooms starkly differ. In low-track classrooms, for instance, open classroom discussion averaged 3.7 minutes, while open discussion in high-track classrooms averaged 14.5 minutes (Applebee et al., 2003). Such differences are far from superficial, and can dictate the extent to which students are able to effectively pursue future academic endeavors. Indeed, effective preparation and a quality educational experience can empower students to then actively explore their own academic interests. Applebee et al. (2003) argue that "when student's classroom experiences emphasize high academic demands and discussion-based approaches to the development of understanding, students internalize the knowledge and skills necessary to engage in challenging literacy tasks on their own" (p. 723).

The policy of placing certain students on a pre-determined low-track of coursework can severely diminish their chances of receiving even an adequate education (Applebee et al., 2003). This deleterious practice of tracking students is demonstrated to be beneficial in one respect, however, low track students exhibit mean growth effects that are noticeably greater for low SES students that largely comprise the enrollment of these low-track classrooms (Vanosdall et al., 2007). While higher-order teaching will inevitably yield greater benefits at certain grade levels, subjecting low-track students to instructional environments that encourage higher-order thinking will allow for markedly greater gains than their high-track counterparts (Vanosdall et al., 2007). It is important for all students to buttress their knowledge, examine their values, communicate with others, make civic decisions, test hypotheses, and formulate/use data (Brophy, 1990). Unfortunately, for those students in low-track classrooms, the instructional focus will oftentimes center on rote preparation that will enable these students to meet standardized test score proficiency standards (Applebee et al., 2003).

Distinguishing Higher/Lower-Order Thinking

The engagement of students in critical thinking stimulates student learning and prepares them for subsequent educational endeavors (Pogonowski, 1987). The simple acquisition of knowledge that informs students' information base is a necessary but insufficient component of appropriate instruction, as students should also be engaged in higher-order thinking (Underbakke, Borg & Peterson, 1993).

To gain a better appreciation of the nature of higher-order thinking within the rural setting, it is useful to contrast it with the lower-order learning that is commonplace within classrooms. Cotton et al. (1989) write that "lower cognitive questions are those which ask the student merely to recall verbatim or in his or her own words material previously read or taught by the teacher" (Cotton et al., 1989). Lower-order thinking does not require student judgment or interpretation, as this lower-order problem solving is largely intuitive and obvious. As such, lower-order thinking requires only basic cognitive skills such as description, explanation, and illustration with examples (Daniel, Lafortune, Pallascio, & Schleifer, 1999; Lewis & Smith, 1993). Conversely, higher-order cognitive questions ask students to mentally manipulate bits of information previously learned and create answers or support answers with logical evidence (Cotton et al., 1989). Furthermore, higher-order thinking can be characterized by several defining

features, which may be evidenced in the form of students' responding to lectures in a complex way, justifying these responses, expressing a nuance, familiarizing a question, developing logical relationships, hypothesizing, and criticizing (Daniel et al., 1999; Lewis 1978; 1993).

Student learning entails not just information acquisition, but curiosity, critical thinking, and students' social sense (Daniel et al., 1999). The application of higher-order thinking skills involves students "elaborating the given material, making inferences beyond what is explicitly presented, building adequate representations, analyzing and constructing relationships" (Resnick, 1987, p. 133). Such higher-order thinking challenges the student to interpret, analyze, manipulate, or otherwise synthesize information (Lewis & Smith, 1993). Brophy (1990) suggests that higher-order thinking requires that students posses: 1) an in-depth knowledge of content, 2) skills in processing information, and 3) the attitudes or dispositions of reflectiveness (Brophy, 1990). Effective teachers with high achieving students were found to be more likely to engage their students in the critical thinking and problem solving activities that require higher-order thinking, although these teachers acknowledged that their students were oftentimes initially resistant to such activities involving higher-order thinking (Brophy, 1990).

Higher-order thinking is an intellectual practice that actively promotes student learning (Brophy, 1990; Kauffman, Davis, Jakubecy, & Lundgren, 2001; Underbakke, Borg, & Peterson, 1993; Freeman, 1989; Kowalchuk, 1999). The educational history and knowledge base of the learner matters; consequently, teachers must be cognizant of a student's previous exposure to certain content material if they are to effectively engage students in appropriate learning (Lewis, 1978). It should be cautioned that the assumption that students must master basic skills before moving on to higher-order skills can lead to inequitable educational experiences for students (Freeman, 1989). Furthermore, state education officials are reluctant to incorporate components of higher-order thinking in standardized tests, as higher-order thinking is hard to test (Freeman, 1989). The challenges associated with an active incorporation of higher-order thinking into the educational curriculum should, therefore, not be underestimated.

Student engagement research should prove to be especially compelling to rural school leaders who lack the money to undertake more resource-demanding enterprises. Educational reforms would be more effective were they to include provisions that incorporate the importance of higher-order thinking into curricula (Freeman, 1989). According to Freeman (1989), only 58% of states have adopted policies that incorporate higher-order thinking into their curriculum. Freeman (1989) also found that 39% of states place more emphasis on basic learning than higher-order thinking, while 39% of states stressed higher-order thinking skills and basic skills equally (Freeman, 1989). Freeman (1989) found that 22% of states' curricula stress higher-order thinking over basic skills (Freeman, 1989). Freeman's (1989) research reveals that only four states' education leaders considered the ways that textbooks might facilitate higher-order thinking. More troubling is the finding that only seven states were considered to be "active states," in which such states' goals and objectives were updated to emphasize teaching for thinking and understanding (Freeman, 1989).

Ultimately, it is the teacher that is the mediator of a community of inquiry (Daniel et al., 1999). The teacher's role in establishing higher-order thinking and learning within classrooms is irreplaceable in all educational settings, irrespective of geography. Actively engaging students in higher-order thinking enables students to more effectively and actively process information (Underbakke, Borg, & Peterson, 1993). A study conducted by Cotton et al. (1989) that involved

the collection of classroom observation data to glean the nature of teacher pedagogy found that during an average recitation, 60% of questions were found to be lower cognitive, 20% were higher cognitive and 20% were procedural (Cotton et al., 1989). This is not to suggest that higher cognitive questions are categorically better than lower ones, however (Cotton et al., 1989). It is the case that a certain level of teacher directed pedagogy that provides students with an appropriate knowledge base is both necessary and desirable (Valentine, 2005; 2007; 2008).

Rural school faculty members should note that there is no singular or superior way to provide higher-order instruction and thinking to students. It is common, however, for pedagogy that is intended to engage students in higher-order thinking to incorporate instructional methods that encourage students to engage in the following behaviors: 1) hypothesizing and testing, 2) assessing arguments, 3) solving interpersonal problems, and 4) thinking in probabilistic terms (Kowalchuk, 1999). Kowalchuk (1999) argues that teachers must actively consider the extent to which they give due attention to content knowledge, the development of student learning skills, and the awareness of those student dispositions that lead to thoughtfulness and understanding associated with meaningful learning (Kowalchuk, 1999).

Teachers can broach generative topics that relate to a wider variety of issues (Kowalchuk, 1999). However, teaching that incorporates topics that examine what students already do in their everyday lives, while also encouraging student learning outside the classroom, is a most effective way of stimulating higher-order thinking and learning (Kowalchuk, 1999). Training teachers to question students in a fashion that provokes higher-order thinking is related to student achievement (Cotton et al., 1989). Ultimately, it is within the teacher's control to dictate the nature of their pedagogical practices and other classroom activities that actively facilitate such higher-order thinking.

It is important that teachers avoid didactically conveying factual information to students (Heistad, 1999). Be it on standardized tests or in their professional lives, students will be challenged to think critically and creatively, and they should be educated accordingly. Also of vital importance is students' ability to adroitly problem-solve in both classroom and employment contexts. Consequently, teacher instruction in rural settings that incorporates problem-solving skills will be of great value to students. Student problem solving often involves a process of students': a) becoming aware of the problem, b) gathering data, c) forming hypotheses, d) testing these hypotheses, and e) reaching conclusions (Brophy, 1990). Brophy (1990) continues by convincingly arguing that "Obviously, little or no higher-order thinking would be involved in a purely directive…approach to values education," (p. 382). This leaves the reader to conclude that teacher pedagogy that is more interactive than simple teacher-directed instruction is irrefutably more beneficial to students.

Research suggests that the nature of student thinking can be influenced by the nature of teachers' pedagogical mannerisms (Marzano, 1993). Teachers most commonly question students as they attempt to enhance student thinking (Marzano, 1993). Underbakke, Borg, and Peterson (1993) note that "while critical thinking skills apparently do not develop spontaneously, a number of research studies have demonstrated that students can learn these skills if they are taught" (p. 141). The teaching of thinking need not be explicit nor mechanical; rather, it can involve enculturation, in which teachers create a culture of thinking in the classroom by 1) acting as exemplars of metacognition, 2) providing opportunities for students to interact with one another, and 3) providing students with direct instruction in metacognitive practices and

activities (Tishman & Perkins, 1993; Underbakke, Borg, & Peterson, 1993). Teachers more commonly employ constructivist strategies, in which meaning is constructed by the learner. Such a practice underscores the vital role that students exhibit as they are taught to learn (Marzano, 1993).

Teachers who seek to impart effective analytic strategies and skills to their students can do so by employing explicit pedagogical techniques (Marzano, 1993). More explicit instruction on teaching thinking includes engaging students in the practice of identifying component parts and articulating the relationships among the parts (Marzano, 1993). This can be accomplished in a more knowledge-free fashion, in which a student's learning capability is not dependent upon his or her current content knowledge base (Nickerson, 1988; Webster, 1990).

A student who possesses a well-rounded knowledge base is ultimately able to marry this knowledge with more complicated and challenging inquiry (Greeno, 1997). While the possibility of knowledge-free learning instruction exists, the usefulness of mastery questions which call for knowledge and content has also been demonstrated to be effective (Cotton et. al, 1989). Indeed, teachers' instructional questions that call upon a student's knowledge to defend a particular position are pedagogically effective (Cotton et al., 1989). Instructional pedagogy that asks students to synthesize information by drawing upon current and prior knowledge to offer hypotheticals has also been shown to be effective (Cotton et al., 1989). Instructional leaders should also ensure that students are encouraged to introspectively reflect on the learning process itself (Nickerson, 1988). As students become acclimated to flexible thinking and learning, this will ultimately enhance their problem-solving skills (Underbakke, Borg& Peterson, 1993). The explicit instruction about the mechanics of problem solving allows for more transferability of such problem-solving skills (Underbakke, Borg & Peterson, 1993).

The modeling and teaching of thinking behaviors, like the teaching of any subject, must be done appropriately and effectively (Nickerson, 1988). Teachers that impress upon students the importance of fair mindedness, and galvanize student motivation to actively and rationally pursue learning (Nickerson, 1988) in a thoughtful manner, are more likely to benefit students (Fogarty & McTighe, 1993). Such analytical student learning, as well as students' learning to think, need not be done in isolation. Instead, it is useful to place students in pairs to problem solve. These cooperative, situative learning strategies, in which students learn in communities as communities, have been shown to be especially effective (Tishman & Perkins, 1993; Fogarty & McTighe, 1993; Greeno, 1997). Under this situative view, the underlying objective of student learning remains the fundamental instructional goal and not simply the shallow means to an end. (Fogarty & McTighe, 1993; Greeno, 1997).

Research Methods: The IPI Instrumentation

The Instructional Practices Inventory (IPI) is a process employed by classroom observers to ascertain the nature of student engagement across classrooms within a school. The IPI is comprised of "a set of observational categories complex enough to provide substantive data grounded in the knowledge of best practice (valid) yet easily understood and interpreted" (Valentine, 2007). The IPI instrumentation allows a trained classroom observer to collect scores of observational codes that capture student engagement behaviors for each school. The observation categories included in the IPI observation protocol are: (1) student disengagement,

(2) student engagement in non-higher order activity without teacher participation, (3) student engagement in non-higher order activity with teacher support, (4) teacher-directed instruction, (5) student engagement in higher-order classroom discussion, and (6) all other higher-order student learning.

The IPI process focuses on student engagement and cognitive thinking rather than teacher or student behavior. The IPI profile data can be used to foster teacher engagement in whole-faculty and small-group collaborative analysis, reflection, and decision-making of the profile data. The IPI instrumentation, and the accompanying building-level instructional processes, can ultimately provide telling and comprehensive school-wide data that allow teachers and administrators to continuously monitor and refine their pedagogical practices. These components of the IPI process support continuous change and collectively foster organizational learning (Valentine, 2007).

Undoubtedly there exists a multitude of factors whose impact on student learning are noteworthy. This exploratory study was designed to glean the extent to which student engagement levels may or may not lead to demonstrable gains in standardized achievement performance of public school students. The study is constructed in a manner whereby the researcher is able not only to offer dichotomous "yes/no" conclusions about such a relationship, but also to expound on the magnitude with which different forms of student engagement ultimately impact students' abilities to perform at or above the proficiency levels of the Missouri Assessment Program (MAP) standardized tests.

One of the more complex methodological challenges presented by the present study is not formulaic in nature, but rather involves the adequate and accurate definition of student engagement levels and what constitutes higher and lower ordering thinking. Such attempts to delineate meaningfully nuanced distinctions between various types of student engagement can quickly become obscured and fruitless if student engagement behaviors are hyper-parsed, and categorized as such. The Instructional Practices Inventory strikes a methodologically appropriate balance between meaningfully categorizing student engagement categories without deconstructing the classroom environment to such an extent that coding the minutia of student behavior becomes an untenable task for the classroom observer. More importantly, as the categories become more numerous (and indistinguishable), the reliability of such classroom observations can become greatly diminished. With this in mind, the Instructional Practices Inventory categorizes student engagement levels on a continuum from 1 to 6, which is designed to account for the spectrum of student engagement that one can expect to find in any given classroom at a particular moment.

Table One offers an explanation of each of the six coding categories. It is important to note that while the higher-order categories ("5" and "6") represent desirable forms of student learning whereas the lower-order categories ("1" and "2") represent less effective and generally undesirable, indefensible forms of student activity within classrooms, it is not always possible,

nor desirable, for students to be engaged solely in higher-order activities. As such, categories "3" and "4" account for those moments during classroom instructional time when the teacher is primarily involved in informing and directing the students' activities in the classroom, as student engagement becomes mostly passive and inactive. This might come in the form of teachers informing students of certain tasks or logistical considerations or teacher-directed learning, both of which are inevitable components of effective teacher pedagogy and student learning.

Table One: ***Instructional Practices Inventory Category Descriptions***

Student Active Engaged Learning (6)	Students are engaged in higher-order thinking and developing deeper understanding through analysis, problem solving, critical thinking, creativity, and/or synthesis. Engagement in learning is not driven by verbal interaction with peers, even in a group setting. Examples of classroom practices commonly associated with higher-order/deeper Active Engaged Learning include: inquiry-based approaches such as project-based and problem-based learning; research and discovery/exploratory learning; authentic demonstrations; independent metacognition, reflective journaling, and self-assessment; and, higher-order responses to higher-order questions.	**Student Engagement in Higher-Order Deeper Learning**
Student Verbal Learning Conversations (5)	Students are engaged in higher-order thinking and developing deeper understanding through analysis, problem solving, critical thinking, creativity, and/or synthesis. The higher-order/deeper thinking is driven by peer verbal interaction. Examples of classroom practices commonly associated with higher-order/deeper Verbal Learning Conversations include: collaborative or cooperative learning; peer tutoring, debate, and questioning; partner research and discovery/exploratory learning; Socratic learning; and, small group or whole class analysis and problem solving, metacognition, reflective journaling, and self-assessment. Conversations may be teacher stimulated but are not teacher dominated.	
Teacher-Led Instruction (4)	Students are attentive to teacher-led instruction as the teacher leads the learning experience by disseminating the appropriate content knowledge and/or directions for learning. The teacher provides basic content explanations, tells or explains new information or skills, and verbally directs the learning. Examples of classroom practices commonly associated with Teacher-Led Instruction include: teacher dominated question/answer; teacher lecture or verbal explanations; teacher direction giving; and, teacher demonstrations. Discussions may occur, but instruction and ideas come primarily from the teacher. Student higher order/deeper learning is not evident.	**Student Engagement in Knowledge and Skill Development**
Student Work with Teacher Engaged (3)	Students are engaged in independent or group work designed to build basic understanding, new knowledge, and/or pertinent skills. Examples of classroom practices commonly associated with Student Work with Teacher Engaged include: basic fact finding; building skill or understanding through practice, "seatwork," worksheets, chapter review questions; and multi-media with teacher viewing media with students. The teacher is attentive to, engaged with, or supportive of the students. Student higher-order/deeper learning is not evident.	

Student Work with Teacher not Engaged **(2)**	This category is the same as Category 3 except the teacher is not attentive to, engaged with, or supportive of the students. The teacher may be out of the room, working at the computer, grading papers, or in some form engaged in work not directly associated with the students' learning. Student higher-order/deeper learning is not evident.	
Student Disengagement **(1)**	Students are not engaged in learning directly related to the curriculum.	**Students Not Engaged**

IPI coding is not based on the type of activity in which the student is engaged, but rather how the student is engaging cognitively in the activity. Examples provided above are only examples often associated with that category. The Instructional Practices Inventory categories were developed by Bryan Painter and Jerry Valentine in 1996. Valentine refined the descriptions of the categories (2002, 2005, 2007, and 2010) in an effort to more effectively communicate their meaning.
The IPI was developed to profile school-wide student engaged learning and was not designed for, nor should it be used for, personnel evaluation.

The Instructional Practices Inventory (IPI) survey questionnaire was the primary instrument used to capture data about the nature of the implementation of the IPI process. The IPI survey was constructed in collaboration with the developer of the IPI process to capture several environmental factors demonstrated to directly affect student performance. More specifically, the IPI survey enabled the researchers to ascertain the perceived levels of school trust, collective teacher efficacy, teacher commitment, and the self-reported levels of importance that are placed on academic achievement (Valentine, 2005; 2007; 2008).

School trust can be a critical and necessary component for academic excellence. Hoy, Tarter, and Hoy (2006) note that "A culture of trust should provide a setting in which people are not afraid of breaking new ground, taking risks, and making errors" (p. 237). Survey responses suggestive of school environments in which school leaders are mindful and prospective in their mission, and desirous of improving the operational effectiveness and academic excellence of the school, served as a proxy of faculty trust. Question 14 of the IPI survey, for instance, while not restricted solely to such a consideration, captured elements of the processes and practices in the public school environment. Furthermore, it might be the case that the IPI adoption could serve as a meaningful proxy of schools that are proactive in their efforts to anticipate future challenges by focusing on current operational deficiencies (Hoy, Tarter, & Hoy, 2006). The school trust construct was captured by several IPI survey questions that asked the respondents to indicate his or her perception of the extent of teacher autonomy and school democracy/egalitarianism levels, as well as the extent to which teacher input is valued in the school (Question 6 – whether the faculty was informed about the process; Question 9 – who led the first data collection; Question 10 – the organization and structure associated with first IPI faculty meeting). Respondents were also asked to indicate their perceptions of the extent to which teachers lead the IPI faculty sessions. Such behaviors represent an accurate proxy for the level of trust that pervades the wider school environment (Valentine, 2005; 2007; 2008). The survey questions that tested the distinctive aforementioned factors were dispersed throughout the questionnaire so as not to signal to the respondent a detectable line of questioning.

The IPI survey questionnaire also contained questions that empirically captured the level of teacher collective efficacy within the school (Valentine, 2005; 2007; 2008). Goddard, Hoy, and Hoy (2004) adopt Bandura's (1977) definition of collective teacher efficacy as "the perceptions of teachers in a school that the efforts of the faculty as a whole will have a positive effect on students. While teacher efficacy is a type of self-efficacy, collective efficacy involves the personal agency of teachers at a context-specific group level" (Goddard, Hoy, & Hoy, 2004). As a consideration of collective teacher efficacy might allow for an enhanced understanding of how schools differ in the attainment of the education of students, such a factor was incorporated in the IPI questionnaire (Goddard, Hoy, & Hoy, 2004**)**. By questioning respondents as to whether teachers were able to work in teams (IPI Survey Question 10), and whether these teachers were empowered to determine the tone and direction of the meetings (Question 12), an empirical determination of efficacy levels was made (Valentine, 2005; 2007; 2008). The level of faculty receptivity could also be gleaned from several of the survey questions (Valentine, 2005; 2007; 2008). Finally, the extent to which the survey respondents were convinced that the IPI was effectively being employed within the schools and ultimately yielded material gains to both the quality of teacher pedagogy and subsequent student learning served as a sound proxy for teacher collective efficacy (Question 14) (Valentine, 2007; 2008). Such a factor was studied by employing LISREL 8.8 software to conduct a measurement models that incorporated these factors, as there already exists "strong reason to lead schools in a direction that will systematically develop teacher efficacy; such efforts may indeed be rewarded with continuous growth in not only collective teacher efficacy but also student achievement" (Goddard, Hoy, & Hoy, 2000). Goddard, Hoy, and Hoy (2000) further argue that high collective teacher efficacy can promote a faculty acceptance of challenging goals, can lead to stronger levels of organizational support, and can generate persistence among leaders to demand better personal and organizational performance. As such, a collective efficacy construct was incorporated into this study (Goddard, Hoy, & Hoy, 2000; 2004).

The survey questionnaire further captured the number of times and the duration that the IPI practices were executed within a given school (Questions 4 and 5) (Valentine, 2007; 2008). The frequency and duration of IPI practices undertaken within schools served as a proxy for the extent to which the schools value academic achievement (Hoy, Tarter, & Hoy, 2006). For the purposes of the present study, the extent to which the IPI was implemented with integrity is assumed to be a robustly telling proxy that manifests other features of the school's culture and climate (Valentine, 2007; 2008). More specifically, a good faith IPI implementation effort was equated with a school's desire to ensure that a challenging climate of academic excellence exists at the building level (Hoy, Tarter, & Hoy, 2006). Furthermore, a consideration of the priorities of the respondents, as they enumerate their objectives on the IPI questionnaire (Questions 3, 12, and 14), serves as a telling indicator of the extent to which classroom instruction and student achievement is valued by the school, and can be considered to be an apt proxy for the fidelity of IPI treatment implementation (Hoy, Tarter, & Hoy, 2006). The importance of the academic optimism factor (captured by Questions 6b and 11) must not be understated, as such academic emphasis can explain math and reading achievement scores despite markedly differing SES levels of a school population (Hoy, Tarter, & Hoy, 2006).

A problematic feature of these curricular initiatives is the extent to which "teachers view the acquisition of pedagogical knowledge as unrelated to formal programs that seek to demonstrate or develop that knowledge" (Firestone & Pennell, 1993, p. 507). The extent to

which the faculty is committed to the instructional treatment was gleaned from the survey questionnaire, as questions about the mechanics of incorporating initiatives (survey question 3), expectations (survey questions 12, 13a, and 13b), and programs of prospective benefits to the school were employed (question 14). Firestone and Pennell (1993) note that "the committed [teacher] believes strongly in the object's goals and values, complies with orders and expectations voluntarily, exerts considerable effort beyond minimal expectations for the good of the object, and strongly desires to remain affiliated with the object." The changing nature of teacher commitment can prove to be impactful on the broadly defined but fluid conception of what constitutes good teaching (Firestone & Pennell, 1993). With this in mind, the IPI questionnaire temporally captured the level of teacher commitment.

A Brief Explanation of the IPI Practices and Processes Fidelity Levels

As the practices and processes associated with the IPI have been delineated and elaborated upon, it is important for the reader to appreciate that the IPI treatment fidelity is defined as the measurable level of such key practices and processes. The IPI survey responses crafted to coax specific building level information regarding the IPI implementation were coded, and the raw, numerical gains in such survey coding were then subjected to SEM measurement models, just like any other quantifiable input data.

Survey Data Collection

The IPI data provided by interviewees included a statistical profile of the nature and level of student engagement within a school (Valentine 2007; 2008). The IPI profiles provided a statistical representation of engagement, including whether students are inactive, are engaged in knowledge acquisition with or without teacher attention, are the recipients of didactic teaching, or are engaged in higher-order thinking and reflection **(**Valentine, 2005; 2007; 2008).

All free-response items from the survey instrument were given pre-designated codes (Valentine, 2007; 2008). These survey responses provided the quantitative data needed to ascertain whether a statistical relationship existed between effective teaching and administrative practices, and the corresponding school-level variables (which are captured by the coded classroom observation data) without assaulting the respondents' with a barrage of Likert-style questions.

The Missouri Department of Education's (DESE) Web Site served as the principal source of secondary data collection for this study (Department of Elementary and Secondary Education, 2008). School districts' and school buildings' demographic, as well as other pertinent teacher and administrator characteristics, were available from the state education department's Web Site. The availability of these data allowed for the pairing of the IPI schools with non-treatment schools (which were entirely devoid of the IPI practices) schools that are representative of the typical Missouri public school (DESE, 2008).

Provided in Tables Two through Five is the descriptive output associated with the Hierarchical Linear models that were constructed to test the relationship between lower-order student engagement and standardized achievement in rural schools. Of note is the proportion of free-and-reduced lunch students (FRL) that is comparable to the FRL rates of the IPI studies included schools from across the state. Additionally, both the higher and lower-order student

engagement levels, as well as the standardized achievement levels within rural schools, do not deviate appreciably from the wider population samples that have been tested in the past. Differences between rural schools and the schools tested in the wider state study do emerge, however. In particular, the proportion of teacher's with master's degrees, administrator salaries, enrollment, the percentage of minority students, and the student-teacher ratio are all considerably lower in these areas than in other schools across Missouri.

Table Two: Level-One Rural Descriptive Statistics

VARIABLE NAME	N	MEAN	SD	MINIMUM	MAXIMUM
DISCIPLI	133	1.18	1.70	0.00	9.10
TCHR_CER	133	96.82	3.76	84.20	100.00
TCHR_MAS	133	41.40	14.08	7.50	76.10
TCHR_SAL	133	38.17	3.94	27.09	49.72
ADMIN_SA	133	62.89	9.09	43.46	92.91
FRL	133	45.08	13.24	13.90	79.20
TCHR_EXP	133	12.47	2.24	8.20	18.00
ENROLLME	133	406.73	270.70	43.00	1858.00
PCT_MIN	133	5.15	5.58	0.00	36.20
STU_TCHR	133	17.56	3.55	5.00	27.00
COMM_07	133	42.81	7.70	20.50	63.00
MATH_07	133	43.98	9.67	18.40	73.50
AV_T1	133	3.54	3.42	0.00	16.00
AV_T2	133	8.27	5.84	0.00	34.50
AV_C1	133	3.18	3.26	0.00	14.50
AV_C2	133	8.14	6.05	0.00	34.50

Not surprisingly, the district-level data, contained in Table Three below, is very similar to the building-level data. Additional variables were contained in level two of the models that warrant additional attention, however. The average family income was found to be $44,720, while the average house value was just under $80,000. Additional school performance metrics

were also computed at this level: the average ACT score of rural districts was 20.84, while 61.53 of rural districts' students attend college. The percentage of students within these rural districts who live below the poverty line was found to be just over 10% of the student population. Finally, 78.50 percent of student's families within these rural districts remained in their respective counties the preceding five years, while 61.50 of families within the county contain married couples.

Table Three: Level-Two Rural Descriptive Statistics

VARIABLE NAME	N	MEAN	SD	MINIMUM	MAXIMUM
AVG_TCHR	69	37.39	4.11	27.09	50.22
AVG_ADM	69	67.67	7.69	43.46	92.80
PER_PUP	69	78.99	15.63	60.58	143.95
AVG_FAM	69	44.72	6.59	30.01	60.27
HOUSE_VA	69	79.66	25.59	36.37	149.23
PCT_MIN	69	5.61	5.86	0.00	29.10
AVG_ACT	69	20.84	1.04	18.00	23.50
TO_COLLE	69	61.53	11.67	23.00	88.90
TCHR_CER	69	97.19	2.69	83.30	100.00
TEACHER	69	40.54	12.73	13.10	66.50
FRL	69	46.59	13.31	18.10	100.00
PCT_POV	69	10.15	4.75	3.30	28.70
TCHR_STU	69	16.67	2.90	7.00	24.00
COMM07	69	42.99	6.34	14.70	56.90
MATH07	69	44.11	7.39	24.10	59.60
YRS_TCHR	69	12.50	1.97	7.70	17.30
DISCIPLI	69	0.98	0.77	0.00	2.90
DROPOUT	69	2.78	1.81	0.00	9.50
PCT_NOT	69	78.50	7.19	49.50	92.70

NOW_MARR	69	61.50	4.23	50.80	71.60

Finally, descriptive output for the regional levels is provided below. Eight of Missouri's nine regional professional development centers (RPDC's) are represented in the current study. The regional-level data varies little from the district data presented above, and therefore is provided for the reader to consult should they find the data to be interest in better illuminating the context of the findings.

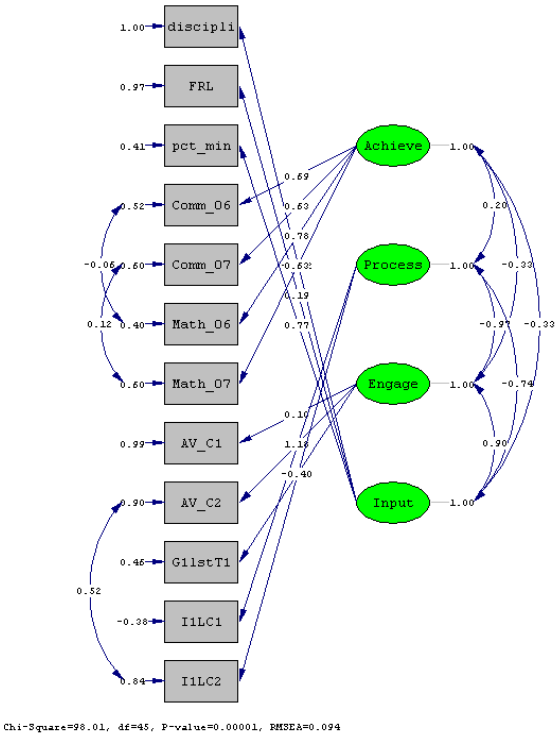
Table Four: Level-Three Rural Descriptive Statistics

VARIABLE NAME	N	MEAN	SD	MINIMUM	MAXIMUM
AVG_TCHR	8	38472.68	3595.99	35219.50	47097.00
AVG_ADM	8	70086.19	7054.18	63151.50	86729.69
PER_PUP	8	8062.64	897.48	7270.11	9415.83
AVG_FAM	8	47852.20	5892.64	43793.87	61813.88
HOUSE_VA	8	82016.63	15798.53	61972.77	114278.63
PCT_MIN	8	10.15	9.25	3.61	32.43
AVG_ACT	8	20.89	0.23	20.40	21.14
TO_COLLE	8	64.15	3.70	60.26	71.43
TCHR_CER	8	97.05	1.31	94.88	98.57
TEACHER	8	44.03	8.33	36.20	62.86
FRL	8	45.11	4.66	38.24	53.01
PCT_POV	8	10.28	2.80	5.58	14.34
TCHR_STU	8	17.27	1.27	14.23	18.06
COMM07	8	43.98	1.41	41.56	45.79
MATH07	8	45.14	2.04	41.60	47.68
YRS_TCHR	8	12.55	0.62	11.83	13.68
ADA	8	94.64	0.33	94.02	95.05
DISCIPLI	8	1.17	0.50	0.47	2.09
DROPOUT	8	3.18	0.66	1.85	4.03

PCT_NOT	8	77.77	2.66	73.98	82.80
NOW_MARR	8	59.78	2.49	55.90	63.39

Six disparately-constructed measurement models were employed to test the relationship between student achievement levels, student engagement levels, educational inputs, and school practices and processes. Figure one below provides a pictorial representation of the structure assumed by these various models.

Figure 1: Representative Measurement Model



Findings

The findings associated with the three-level HLM models that incorporate lower-order student engagement as the dependent variable and the IPI practices and processes, as captured by the IPI SCS , reveal insignificant findings associated with IPI process in the rural schools. As is displayed in Table Five below, the most substantial extent to which lower-thinking is affected by the IPI process relates to non-higher order student engagement with teacher disengagement in core and all classrooms ("C2" and "T2," respectively). Question 6b of the survey, a faculty receptivity metric, reveals that the enthusiastic adoption of the IPI instructional initiative would, at most, lead to a 9.30 point reduction in student engagement coded as a "2" in core classrooms, and 8.34 points across all classrooms. Question 10 of the survey, appears to introduce an offsetting effect in such gains, as faculty discussions of data (Q10) were found to be positively related to lower order student thinking. The magnitude associated with such a relationship is quite small, however, as the slope associated with this ordinally-scaled question suggests that student disengagement and lower order student engagement with teacher disengagement would be enhanced by no greater than 6 points. Nevertheless, this presents, at the very least, a qualifier to the otherwise highly encouraging findings associated with faculty enthusiasm.

The findings associated with the proportion of student populations that receive free-and-reduced lunch ("FRL") are far more consequential. In isolation, the level-one FRL coefficient ranging from -.14 - .17 are more depressed than in other studies. Aggregating the level-one FRL coefficient with the FRL coefficient reveals the more muted impact of FRL on student disengagement levels in rural schools (.06- .09). Put differently, were the FRL rate of a given school 100%, while another school had a 50% FRL rate, this would translate into 3-4.50 percentage point discrepancy in lower-order student engagement levels between the two schools. Similarly, the percentage of minority students coefficient was also a depressed .22, suggesting that the minority populations in rural regions, already scant, would not substantially augment lower-order student engagement levels. Finally, certain structural factors associated with wider educational environments of these rural schools appear to be impactful on student disengagement lvels, but not predictably so. Stated differently, the proportion of students whose parents are married appears to be positively associated with student disengagement ("1"), but more greatly negatively associated with non-higher order thinking and teacher disengagement ("2"). As an example, schools with a 10 percentage point discrepancy in students who reside in married households would yield student disengagement ("1") reductions of 2.2 points, but non-higher order thinking with teacher disengagement ("2") diminishment of as many as 5.7 percentage points.

Table Five: Rural Engagement- School Survey Findings

DV	Survey Ques.	Fixed Effect	FRL-L1	Survey Quest	PPE	Pct_min	FRL L2	Pct-not	Married	FRL L3
C1	Q4	4.48**	-.01	-.20	-.04	.15	.03	-.01	.15	-.19
C1	Q5	4.38**	.00	-.56	-.05	.15	.03	.00	.13	-.13
C1	Q10	4.27**	.05	1.01**	-.08*	.22**	.03	.03	.22*	-.25
C1	Q11	4.57**	-.01	-.22	-.04	.13	-.01	-.02	.15	-.22
C1	Q12	4.52**	-.01	.15	-.04	.14	.03	-.01	.17	-.23
C2	Q10	10.20**	-.16**	.99**	-.06	.28	.23*	.02	-.44	-.39
C2	Q3	10.38**	-.17**	.16	-.04	.23	.19	.00	-.45	-.38
C2	Q4	10.23**	-.16**	-.38	-.04	.26	.19	.02	-.50	-.32
C2	Q5	10.14**	-.14*	-.69	-.05	.25	.17	.03	-.51*	-.29
C2	Q6B	10.31**	-.17***	-1.55**	-.07	.24	.19	.04	-.57*	-.21
C2	Q11	10.44**	-.16**	-.82	-.05	.22	.18	.01	-.52	-.36
C2	Q12	10.45**	-.16**	-.40	-.05	.22	.18	.00	-.52	-.38
C1	Q3	4.53**	.01	.73*	-.05	.13	.02	-.02	.18	-.25
C1	Q6B	4.55**	-.01	.08	-.04	.13	.03	-.02	.17	-.23
T1	Q10	4.21**	.02	1.02**	-.08*	.24**	.05	-.06	.21*	-.19
C1	Q14	4.54**	-.02	.49	-.03	.15	.03	-.02	.21	-.25
C2	Q14	10.38**	-.16**	-.24	-.04	.22	.19	.01	-.52	-.37
T2	Q14	10.60**	-.15**	-.22	-.05	.18	.20	-.01	-.49	-.48
T1	Q3	4.41**	-.01	.70*	-.05	.16	.03	.01	.17	-.21
T1	Q4	4.40**	-.03	-.16	-.04	.17	.05	.01	.15	-.16
T1	Q5	4.25**	-.09	-.52	-.06	.19	.05	.03	.12	-.08
T1	Q6B	4.45**	-.03	.24	-.04	.15	.05	.01	.16	-.19
T1	Q11	4.47**	-.03	-.15	-.04	.15	.05	.01	.15	-.18
T1	Q12	4.38**	-.03	.26	-.04	.16	.05	.02	,17	-.19
T1	Q14	4.44**	-.04	.56**	-.03	.18	.05	.00	.21	-.21
T2	Q4	10.49**	-.15**	-.30	-.04	.21	.20	.00	-.47	-.44
T2	Q3	10.60**	-.16**	.11	-.04	.19	.20	-,01	-.47	-.49
T2	Q5	10.40**	-.13**	-.58	-.05	.21	.19	.01	-.48	-.41
T2	Q6B	10.52**	-.16***	-1.39***	-.07	.20	.20	.02	-.54*	-.34
T2	Q10	10.46**	-.15**	.75	-.06	.23	.23*	.00	-.43	-.49
T2	Q11	10.65**	-.15**	-.71	-.05	.19	.20	-.01	-.49	-.47
T2	Q12	10.65**	-.15**	-.32	-.05	.19	.20	-.01	-.49	-.49

A consideration of those HLM models that incorporated standardized achievement levels as the dependant variable with lower-order student engagement and education input levels reveals intuitive findings. The coefficients associated with student disengagement in core classrooms ("C1," "T1") ranged from -.39-.42. Similarly, the coefficient for student disengagement in all classrooms ("T1") was found to be .46. Likewise, the coefficients

associated with the non-higher order thinking ranged from -.20 – .28 in core classrooms ("C2") and -.26-.31 in all classrooms ("T2"). The magnitudes of these independent variable coefficients are more depressed in rural regions than for the entire statewide study. Among rural schools, for every 10 percentage point increase in student disengagement, a 4 point decline in standardized achievement is to be expected. For student non-higher order engagement with teacher disengagement ("C2," "T2"), 3 percentage point declines would result.

Table Six: **Rural Achievement – Student Engagement Findings**

DV	Fix	Engage	Tchrmast	TFRLL1	Stutchr	Engage	PPE	Pct_min	FRl 2	Pct_Not	Married	FRLL3
Comm	42.3	C1	-.04	.04	.33	-.39**	.04	-.13	-.24***	-.19**	-.19	.04
Comm	42.33	C2	-.04	.04	.26	-.20*	.06	-.15	-.23***	-.03	-.26	.06
Math	43.46	C2	-.11*	-.10	.39	-.28**	.15**	-.41**	-.10	-.19*	-.49**	.15**
Math	42.37	T2	-.04	.03	.25	-.26**	.06	-.13	-.22***	-.18*	-.27	.05
Math	43.42	C1	-.11*	-.09	.49*	-.42*	.13**	-.41**	-.25***	-.20*	-.39	.10
Math	43.46	C2	-.11*	-.10	.39	-.28**	.15**	-.41**	-.10	-.19*	-.49**	.11
Math	43.45	T1	-.11*	-.10	.48*	-.46**	.12**	-.36**	-.24***	-.19*	-.37*	.13
Math	43.47	T2	-.10*	-.10	.39	-.31**	.14**	-.40**	-.22***	-.19*	-.49	.10

Findings from the Measurement Models are provided in Table Seven below. Significant findings in the expected direction are evidenced among several factors within each of these models. It should be noted that the magnitudes of the factor correlations vary considerably. The correlational magnitudes between achievement and school inputs, for example, ranged from -.33 - -.99. The integrity-engagement latent factor relationships evidenced a similar dispersion of magnitude values (-.26 - .97). More uniform magnitudes were evidenced for the engagement and input latent factors (-.72-.90) and integrity and input -.56- -.74. Finally, weak to weakly moderate correlational relationships existed with achievement-school process latent factors (.20) and the achievement-engagement factors (-.17 - - .33).

Table Seven: Latent Factor Relationship Output Lower Order Thinking

Factor Relationship	Strength	Model
Achievement-Input	-.99**	Model 1
Achievement-Input	-.80**	Model 2
Achievement-Input	-.33*	Model 3
Achievement-Input	-.99**	Model 4
Achievement-Input	-.45**	Model 5
Achievement-Input	-.69**	Model 6
Engagement-Input	.15	Model 1
Engagement-Input	.23	Model 2
Engagement-Input	.90**	Model 3
Engagement-Input	-.72*	Model 4
Engagement-Input	.09	Model 5
Engagement-Input	.18	Model 6
Achievement-Process	.04	Model 1
Achievement-Process	.16	Model 2
Achievement-Process	.20*	Model 3
Achievement-Process	.20*	Model 4
Achievement-Process	.23	Model 5
Achievement-Process	-.11	Model 6
Achievement-Engagement	-.10	Model 1
Achievement-Engagement	-.30**	Model 2
Achievement-Engagement	-.33*	Model 3
Achievement-Engagement	.11	Model 4

Achievement-Engagement	-.17*	Model 5
Achievement-Engagement	-.23**	Model 6
Integrity-Input	.33	Model 1
Integrity-Input	-.56*	Model 2
Integrity-Input	-.74**	Model 3
Integrity-Input	-.65*	Model 4
Integrity-Input	-.15	Model 5
Integrity-Input	.11	Model 6
Integrity-Engagement	.93**	Model 1
Integrity-Engagement	-.85**	Model 2
Integrity-Engagement	-.97**	Model 3
Integrity-Engagement	.68**	Model 4
Integrity-Engagement	-.26*	Model 5
Integrity-Engagement	.69**	Model 6

Models' Variance Explanation

The proportion of student achievement variance explained in rural schools was of interest to the researchers. As depicted in TABLE X, the great majority of standardized achievement variance is attributable to across-school differences (90%), while the remaining 10% can be linked to across-district disparities. No standardized achievement variance is accounted for by inter-regional differences according to the findings of the many models employed in this study.

A separate but related issue involved the variance associated with lower-order engagement and disengagement when tested in relation to building level practices and processes associated with the IPI. The uniformity found with standardized achievement variance discussed above was entirely absent once student engagement variance was considered. More specifically, the across-school differences accounted for anywhere between 18 -100% of total variance. The explanation for such marked disparities in variance apportionment is not as illusive as it might facially appear. Indeed, while only lower-order ("2") and disengagement ("1") were the outcome variables upon which the variance distribution was considered, a wide panoply of

building level practices and processes associated with the IPI appeared to largely dictate the levels of across school and across district variance. While the IPI is oftentimes initiated by school districts but undertaken by schools, certain coded practices and processes would be more attributable to school level attributes, while others would be more greatly linked to district level considerations. Accordingly, the findings, while not falling into a cogently explicable pattern, nevertheless are meaningful and telling when considered on an individual basis.

Empty 133 IPI Rural Schools	Comm Arts	Math	T1	T2	C1	C2
L1 Rel	.37	.15	.39	.68	.28	.64
L2 Rel	0	.48	.39	.002	.37	.002
Sig	43.91	79.93	8.14	15.89	8.26	18.74
Tau	15.2	7.47	3.06	21.44	1.87	20.97
U00	.001	6.84	.68	.01	.52	.01
Across School	74	85	44	43	78	47
Across District	26	8	26	57	18	53
Across Region	0	7	30	0	4	0

FULL Variable 133 IPI Rural Schools	Comm Arts C1	Comm Arts C2	Comm Arts T2	Math C2	Math T1	Math T2	Math C1	Math C2
L1 Rel	.12	.18	.16	.002	.004	.003	.004	.002
L2 Rel	.001	.001	.001	.001	.001	0	.001	.001
Sig	44.25	42.74	42.40	67.26	67.61	66.91	68.05	67.26
Tau	3.16	5.07	4.57	.09	.13	.10	.15	.09
U00	.004	.004	.004	.002	.004	.002	.002	.002
Across School	93	89	90	100	100	100	100	100
Across District	7	11	10	0	0	0	0	0
Across Region	0	0	0	0	0	0	0	0

Empty 72 IPI Rural Survey Schools	C1	C2	C123	Comm Arts	Math	T1	T2	T123

L1 Rel	.60	.82	.43	.33	.32	.48	.81	.44
L2 Rel	.001	.003	.001	.20	.62	.001	.14	.002
Sig	5.87	13.11	71.06	46.01	43.55	7.18	12.23	70.89
Tau	5.91	41.89	34.46	13.79	12.26	4.37	37.55	35.33
U00	.003	.03	.02	2.59	23.46	.002	1.81	.03
Across School	49	24	67	74	55	62	24	24
Across District	50	76	33	22	15	38	73	76
Across Region	1	0	0	4	30	0	3	0

RURAL SURVEY	L1 Reliability	L2 Reliability	Sigma	Tau	Uoo	Across School	Across District	Across Region
C1, Q4	.52	.001	6.03	4.29	.001	58	42	0
C1, Q5	.57	.001	5.48	4.88	.02	53	47	0
C1, Q10	.01	0	8.36	.05	0	99	1	0
C1, Q11	.57	.001	5.68	5.00	.002	47	53	0
C1, Q12	.48	.001	6.34	3.78	.001	63	37	0
C2, Q10	.85	.001	9.20	36.44	.009	20	80	0
C2, Q3	.82	.001	10.56	34.98	.01	23	77	0
C2, Q4	.80	0	11.00	32.60	.01	25	75	0
C2, Q5	.79	0	11.26	31.00	.01	26	74	0
C2, Q6	.86	.001	7.75	35.84	.01	18	82	0
C2, Q11	.82	0	10.11	34.39	.01	23	77	0
C2, Q12	.83	0	10.21	35.93	.01	22	78	0
C1, Q3	.42	.001	6.40	2.97	0	68	32	0
C1, Q6	.52	.001	6.08	4.27	.002	59	41	0
T1, Q10	.004	0	8.54	.02	0	100	0	0
C1, Q14	.44	.001	6.40	3.19	.001	67	33	0
C2, Q14	.83	.001	10.35	35.69	.01	22	78	0
T2, Q14	.83	.001	9.41	34.39	.01	21	79	0
T1, Q3	.25	.001	7.81	1.55	0	83	17	0
T1, Q4	.41	.001	7.06	3.14	.001	69	31	0
T1, Q5	.45	.001	6.61	3.49	.001	65	35	0
T1, Q6	.40	.001	7.17	3.01	.001	70	30	0
T1, Q10	.004	0	8.54	.02	0	100	0	0
T1, Q11	.45	.001	6.81	3.58	.001	66	34	0
T1, Q12	.29	.001	7.83	1.97	.001	80	20	0
T1, Q14	.30	.001	7.46	1.98	.001	79	21	0
T2, Q4	.82	.001	9.90	32.09	.01	24	76	0
T2, Q3	.83	.001	9.58	33.85	.01	22	78	0
T2, Q5	.81	.001	10.09	30.48	.01	25	75	0
T2, Q6	.86	.001	7.47	33.75	.01	18	82	0
T2, Q10	.85	.001	8.71	35.20	.01	20	80	0

T2, Q11	.83	.001	9.28	33.20	.01	22	78	0
T2, Q12	.84	.001	9.35	34.49	.01	21	79	0

A Realistic Application of the Findings

The essence of the overall IPI process parallels the methodology of this study quite coherently. That is, after an initial IPI data collection, rural school leaders immediately become aware of their school's current student engagement profile in raw percentage terms. Quantifying student engagement behaviors is not only diagnostically meaningful, but presents the opportunity for more healthy and constructive goal setting in rural schools. Indeed, rural school leaders are then empowered to chart a more data-driven course for their faculties. The designated benchmarks, in turn, will augment standardized test passage rates according to the findings fleshed out below.

Rural teacher leaders and administrators need not approach the IPI process with a blindfold on. Groping in the dark to attain arbitrary declines in lower-order thinking could lead to faculty dissent, confusion, and/or a lack of full-buy in. While the optimal level of total disengagement is, of course, zero percent, rural faculty members are also wise to appreciate the devastating effect that ballooning student disengagement levels can exact on both teacher morale and standardized achievement levels. As such, designating 25% to be a realistic level of student disengagement levels after school faculties have been asleep at the wheel for a few academic quarters is meant to represent a preventative construct, and not a false instructional doomsday premonition.

Also important is the temporal design of the IPI process. The IPI process is not a quick fix or shock treatment meant to remedy all that ails a school's instructional health instantaneously. Instead, the IPI process demands from faculties a sustained commitment to altering their pedagogical techniques and practices over a sustained time horizon. It is in this vein that rural school administrators can employ the student engagement benchmarks not as a punitive or heavy-handed oversight metric, but as attainable building-level guideposts that signify faculty growth, commitment, and instructional excellence.

The conceptual ideas presented above were empirically executed in the present study. To better translate these findings into meaningfully interpretable data for school practitioners, policymakers, and researchers, the student engagement coefficients were realistically manipulated by multiplying the figures by plausible fluctuation levels. More specifically, the researchers first computed the difference between the school's current level of lower order thinking and the 25% upper boundary. Such benchmarks represent the realistic threshold for lower-order thinking that is dangerously, yet very much conceivably, elevated. As a result, altered for the better are the school leaders' perceptions and decision-making calculus involved in enacting such changes.

Practitioner Takeaways

Eradicating Disengagement

The end goal of public education in 2010 appears to be very clearly defined: standardized test performance. While the appropriateness and desirability of this metric in assessing and valuing school effectiveness and reform efforts can be philosophically debated, policymakers and school leaders are expected to enhance student performance quickly and precipitously. The practical import of this study closely aligns with these realities. School policymakers and leaders who target and eradicate student disengagement levels can expect to find resulting test performance levels that are marginally enhanced. In this study, the findings for Mathematics and Communication Arts achievement models are virtually identical. Were student disengagement ("C1") to be entirely eliminated within the rural schools, mathematics achievement would increase by 1.34 percentage points. Mathematics achievement levels would be increased by an additional 2.28 percentage points if non-higher student engagement with teacher disengagement in core classrooms ("C2") were entirely eliminated. Communication Arts achievement levels would be enhanced by 1.24 percentage points were student disengagement within core classrooms to be entirely eliminated. Similarly, the eradication of lower-order student engagement with teacher disengagement in core classrooms ("C2") would lead to Communication Arts gains of 1.62 percentage points.

The High Stakes of Disengagement

The implications for rural school leadership on standardized test performance are made strikingly evident as a result of this study. The quality and activeness of school administrators and teacher leaders can largely dictate the extent to which student disengagement levels rise over time. School leaders in rural settings who become complacent, disaffected, or distracted can find themselves in an educational setting where student disengagement levels have risen from a relatively muted 3-5% to a more preponderant 15-25% of all student engagement behavior. The importance of mitigating student disengagement and lower-order thinking within classrooms becomes brightly evident when the reader considers a very plausible scenario under which lower-order student engagement levels increase from their current levels to 25% of all coded student engagement observations. Under such a circumstance, mathematics achievement levels would decline by 9.16 percentage points were student disengagement levels to increase to 25%, while communication arts would decrease by 8.51 percentage points. Were the non-higher student engagement with teacher disengagement in core classrooms ("C2") to increase to 25% of all coded classroom behavior, Mathematics proficiency rates would decline by 4.72 percentage points while Communication Arts passage rates would be diminished by 3.37 percentage points.

The Distinctiveness of Rural Settings

Findings from the SEM measurement models were also significant, as these models contemporaneously account for school inputs, school improvement initiatives, student

engagement levels, and standardized achievement. Significant findings from the measurement models that should be of great interest to rural school faculties and administrators. For good reason, rural school leaders often decry the fiscal difficulties associated with educating students on such a small and unusually expensive scale. Lost in the discussion is a consideration of the potential benefits that rural leaders can enjoy by attempting school reform efforts on this more truncated scale. Within rural schools, lower-order student engagement levels and educational inputs are strongly correlated to one another. The relationship is substantially greater in rural schools, however, suggesting the disproportionately elevated extent to which rural funding and demographics impact student achievement levels.

Building level relationships, efficacy levels, goal setting regimes, and student-teacher relationships are also far more easily manipulated at the rural level. Quite literally, the more physically condensed setting may make the complex and highly fluid variables associated with school change initiatives more easily detectable and navigable by school administrators. Not surprisingly, therefore, lower-order student engagement levels were found to be more considerably correlated with educational inputs than is the case for those schools included in the wider state study. This suggests that uncontrollable school inputs pose greater challenges to rural school leaders as they attempt to reduce lower order student engagement across classrooms.

Next, a consideration of the IPI process within the rural school setting can better place the study's findings in an appropriate context. The very design of the IPI process is complimentary to the expectations and demands of rural school leaders. The structured IPI process encourages whole-faculty input that is acknowledged and transformed by teacher-leaders into actionable building level programs and initiatives that can stimulate student engagement and student learning. All the while, rural buildings' faculty efficacy levels and collective moral will also enjoy growth, as teacher input is valued and dignified. Accordingly, the extent of teacher involvement in the IPI process makes it akin to a grassroots movement in the rural setting. The many uniquely distinctive demands that confront rural school settings across the country appear, from the findings, to be aptly addressed by employing the IPI process.

The structural form of the IPI process and its relationship to school improvement and achievement metrics in rural settings can now be considered alongside the empirical findings of this study. The integrity levels with which school initiatives are undertaken and the student engagement levels were also found to be more highly correlated with one another in rural regions. Rural school leaders can reasonably conclude, therefore, that the fidelity with which school improvement initiatives and best practices are approached at the building level can greatly impact the nature of student engagement within the classroom.

Attention, Policymakers!

The findings of this study should broadcast loud signals to policymakers that rural settings are influenced and impacted by both resource input variables and school improvement

initiatives to an extent that varies from their suburban and urban counterparts. Educational inputs were clearly shown to be highly correlated with the integrity to which school practices and process are undertaken. Given the relationship found between the integrity of the IPI process and student engagement levels within schools, this finding suggest that certain uncontrollable factors may constrain the extent to which rural school leaders are able to manipulate student engagement within classroom.

Policymakers are keenly aware of the increased costs needed to educate each child in isolated and rural regions of states. The findings of this study are not a direct product of geographic or financial considerations, but instead focus internally on the school reform challenges building leaders face as a result of various expenditure, teacher competency, and student demographic considerations. At the very least, it appears that educational leaders in rural leaders may face greater school improvement challenges as a result of the influence that educational inputs exhibit on the IPI school improvement initiative. Both student achievement levels and nature of the practices and process associated with the IPI, as well as student achievement and student engagement levels were found to evidence lower correlation to one another within these rural schools tested as opposed to the school included in the statewide study. As its core, this suggests that for student achievement levels of these rural schools to be considerably impacted, the school processes and student engagement levels need to be altered more appreciably than is the case in schools in non-rural areas. To conclude, policymakers and school leaders are implored to craft school improvement and reform processes that acknowledge such differences.

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