The Instructional Practices Inventory: Using a Student Learning Assessment to Foster Organizational Learning

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Is it feasible to develop a school-wide picture of student learning that can serve as the basis for faculty reflection, instructional change, and school improvement? More specifically,

- How do you collect data that will be accepted by faculty as a fair and accurate representation of student learning throughout the school?
- How do you depict those data in a simple, meaningful format for analysis?
- How do you engage all faculty members in study and reflection about the data that will lead to improved instructional practices throughout the school?
- How does a faculty know if their profiles are typical, excellent, or poor compared to profiles in other similar schools?

Those were critical questions that formed the basis for the development of the Instructional Practices Inventory (IPI) in 1996.

In the introduction to *On Common Ground: The Power of Professional Learning Communities*, Rick and Rebecca DuFour and their co-editor Robert Eaker (2005) draw a significant conclusion about the common elements necessary for school change. In synthesizing the collective writings of the 21 authors whose manuscripts comprise their book, the Dufours and Eaker note that each of these leading experts on school improvement and change

> "supports the premise that students would be better served if educators embraced learning rather than teaching as the mission of their school, if they worked collaboratively to help all students learn, and if they used formative assessments and a focus on results to guide their practice and foster continuous improvement" (p. 5).

The Instructional Practices Inventory process for profiling student engaged learning effectively support those contentions. The IPI is a very practical system for understanding learning across an entire school that provides one form of data valuable when a school faculty begins the critical conversations described in DuFour's quote. The IPI process (a) focuses on student engagement and learning rather than teacher behavior, (b) engages teachers in whole-faculty and small-group collaborative analysis, reflection, and decision-making of the profile data, and (c) provides extensive formative data so teachers can frequently monitor and adjust practices. These components of the IPI process support continuous change and collectively foster organizational learning.

This manuscript describes the IPI data collection categories, the use of those categories to support school-wide instructional change, and data findings from schools of various types that have used the IPI. The discussions throughout this manuscript

represent a decade of use of the IPI for school improvement in schools across the United States.

IPI Development

The IPI was developed in 1996 by Bryan Painter and Jerry Valentine for use in Project ASSIST, a multi-year, comprehensive, systemic school reform of the Missouri Center for School Improvement. ASSIST is an acronym for Achieving Success through School Improvement Site Teams.

The Missouri Center for School Improvement (MCSI) provided school reform support to elementary, middle, and high schools across Missouri during the mid-nineties. In 1997 MCSI became the Middle Level Leadership Center (MLLC). The MLLC was established to continue school improvement initiatives, especially with middle level schools, and to conduct and disseminate research for middle level leaders (middle school principals and teacher leaders). The MLLC is a research and service center within the Department of Educational Leadership and Policy Analysis in the College of Education at the University of Missouri-Columbia. Funding for the Center comes from grants and contracts with professional associations, government agencies, and school systems. (See www.education.missouri.edu/ELPA/MLLC/ for a discussion of the mission, vision, goals, and projects of Center.)

IPI Purposes

The IPI process accomplishes two purposes considered by most as critical to effective school improvement. First, the IPI produces a school-wide picture of student engaged learning that serves as a basis for faculty reflection and instructional improvement. This school-wide profile is a detailed image of instruction across an entire school for a specified period of time. Most schools repeat the profiling process three or more times during the school year. The staff can build single day-in-time images, composite images, and longitudinal images of student engaged learning for their schools.

The IPI also serves as "gain" or "outcome" data important for understanding whether school improvement initiatives have influenced student learning. State standardized tests are too often the only empirical measure of the impact of school improvement initiatives. Data from the IPI observations and profiles of student engaged learning provide observable, objective, quantifiable measures of student engagement.

Project ASSIST provided the initiative for the development of the IPI, but the utility of the instrument has grown well-beyond that reform effort. Since its origination, the developers of the instrument have made presentations at national conferences and professional meetings, and they have provided scores of "observer training sessions" for school districts and state educational agencies responsible for supporting school improvement initiatives in the schools of their region. As a result, hundreds of schools across the United States, and particularly in the central states of the country, use the IPI process regularly to monitor student engagement, reflect on their instructional practices, and design professional development to address their defined issues. Leaders of schools that consistently engage faculty with IPI profile data commonly attribute positive changes as a result of their efforts.

The value of the IPI has been documented formally in other research projects. In 2001, a research team for the National Association of Secondary School Principals'

National Study of Leadership in Middle Level Schools visited a set of "highly successful" middle level schools across the nation and collected IPI data during two-day site visits. Those data provided a composite profile of IPI data in exemplary middle level schools (Valentine, Clark, Hackmann, Petzko, 2004). IPI data have been used to study the relationships among school instructional leadership, collaborative leadership, learning climate, professional development, and teacher-student relationships (Painter, 1998; Quinn, 1999). Reports and monographs have noted the value of the IPI process and recommended its use for school improvement (Quinn, Gruenert, & Valentine, 1999; National Association of Secondary School Principals, 2004, 2006).

Development of the IPI Categories

The development of the IPI began with an extensive review of the existing research and literature of the era. The review findings were replete with insight about best instructional practices but lacking in instruments and processes for collecting and analyzing those practices within the context of a school improvement initiative. Writers of that era noted the emphasis given to structural and organizational reform and the corresponding paucity of attention to instructional change (Newmann and Wehlage, 1995; Hopkins, Ainscow, and West, 1994).

The review of the research and literature provided three broad categories associated with student learning that served as the foundation for the IPI. They were characterized as student-engaged instruction, teacher-directed instruction, and student disengagement. The three broad categories were easy to understand but insufficient as the basis for the types of data that would be needed to foster teacher reflection and serve as a dependent variable to assess the impact of the school improvement initiatives of Project ASSIST. More detailed categories were needed to provide specific data about student engagement and learning experiences with attention given primarily to what students were doing and secondarily to what teachers were doing.

During development of the IPI, a commitment was made to ensure that the instrument addressed engaged learning and delineated between higher-order and non-higher-order learning. From the broad category of student-engaged instruction, two coding categories document higher-order learning: "Student Active Engaged Learning" and "Student Learning Conversations." Student active engaged learning includes research, hands-on and authentic instruction, problem-based learning, cooperative learning, and other types of engaged learning when the instruction engages students in higher-order thinking. Student learning conversations is a specific type of higher-order learning experience in which students are constructing knowledge through student-to-student talk. These two categories combine to provide the total number of observations where higher-order thinking is occurring among the majority of students in the classrooms.

A significant amount of learning can occur when teachers work directly with students in learning experiences commonly referred to as teacher-directed instruction. Two coding categories represent teacher-directed instruction: "Teacher-Led Instruction" and "Student Work with Teacher Engaged." Teacher-led instruction forms the broadest, most common grouping of learning experiences, including most forms of teacher talk, lecture, and direction-giving. Student work with the teacher engaged includes teacher-supported learning experiences, often described as "deskwork" or "seatwork," such as

worksheets, or fact-finding in books and resources. Higher-order thinking is not evident for these two categories.

The other two IPI categories are affiliated with the concept of disengagement: "Student Work with <u>Teacher</u> not Engaged," and "Student Disengagement." Student work with the teacher not engaged is essentially the same as student work with teacher engaged except that the teacher is not providing support or being attentive to the students' learning at the time of the observation. This may be a conscious decision to foster independent work or it may be because the teacher is using that time to accomplish other activities not associated with the students' work. The category of student disengagement includes instances when students are simply not engaged in learning associated with the curriculum.

IPI Category Rubric and Common Look-Fors

The three broad IPI categories, the six categories that are coded during the IPI profiling process, and common instructional "look-fors" associated with each category are presented in Figure 1. This basic IPI rubric and common "look-fors" form the foundation for developing coder reliability during the full-day observer training sessions.

Figure 1
Instructional Practices Inventory Categories

Broad Categories	Coding Categories	Common Observer "Look-Fors"
Student-Engaged Instruction	**Student Active Engaged Learning (6)**	Students are engaged in higher-order learning. Common examples include authentic project work, cooperative learning projects, hands-on learning, problem-based learning, demonstrations, and research.
	Student Learning Conversations (5)	Students are engaged in higher-order learning conversations. They are constructing knowledge or deeper understanding as a result of the conversations. Common examples are cooperative learning, work teams, discussion groups, and whole-class discussions. Conversations may be teacher stimulated but are not teacher dominated.
Teacher-Directed Instruction	**Teacher-Led Instruction (4)**	Students are attentive to teacher-led learning experiences such as lecture, question and answer, teacher giving directions, and media instruction with teacher interaction. Discussion may occur, but instruction and ideas come primarily from the teacher. Higher order learning is not evident.
	Student Work with Teacher Engaged (3)	Students are doing seatwork, working on worksheets, book work, tests, video with teacher viewing the video with the students, etc. Teacher assistance, support, or attentiveness to the students is evident. Higher-order learning is not evident.
Disengagement	**Student Work with Teacher not Engaged (2)**	Students are doing seatwork, working on worksheets, book work, tests, video without teacher support, etc. Teacher assistance, support, or attentiveness to the students is not evident. Higher-order learning is not evident.
	Complete Disengagement (1)	Students are not engaged in learning directly related to the curriculum.

IPI Data Collection Protocols

The development of a process for collecting IPI data that teachers will view as fair and accurate, and thus be willing to use as a basis for reflection and change, was as challenging as the development of the IPI categories. Data collected and profiled must be consistently accurate per the coding categories. Likewise, the data must be collected in a consistent manner from observation to observation and observer to observer. If coder accuracy and reliability are not present, the reflections, goals, and decisions based upon the data might foster inappropriate changes in instruction, programs, or professional development.

The following examples of the IPI data collection protocols provide a sense of how the observer collects the data and also the measures that are used to produce an "optimum" profile that teachers will embrace as fair and accurate.

- Observations take place on "typical" school days when there are no unusual circumstances occurring that would disrupt the normalcy of the data, such as major field trips, assemblies, flu epidemics, etc.
- Observations are conducted on Mondays through Thursdays, avoiding Fridays because many teachers will argue that the variety of activities that often occur on Fridays create a non-typical day. (Whether avoiding Fridays is appropriate or not

is not the key issues for this protocol. The key issue is that teachers, particularly secondary teachers seldom view data collected on Friday as representative of their typical teaching.)

- Faculty are informed a few days prior to the data collection that a colleague or outside observer will be moving throughout all classrooms observing student learning. Teachers should be asked to go about "business as usual" and remind students to do likewise.

- The observer not familiar with the school uses a floor plan of the school and moves systematically throughout the building to ensure that data are gathered proportionately from all instructional settings.

- The observer continuously collects data throughout the school day, repeatedly following the same systematic pattern so each instructional setting (classroom) is observed multiple times. A typical observation day for all but very large schools should result in approximately 125-150 observations. Experienced data collectors often get 150-175 observations in a school day. In large schools, two or more observers collect approximately 250-300 observations. In schools with alternating day curriculum, data should be collected over two days to ensure representation from all learning settings.

- Observations typically last from one to three minutes in length, depending upon the amount of time necessary to be certain the observation is categorized accurately.

- The observer codes the students' initial learning experience observed when they enter the classroom or learning setting. They do not have the prerogative to decide what learning experience to code if the students move from one experience to another during the observation.

- The observer codes the predominant pattern of learning if students are engaged simultaneously in different learning experiences.

- The observer focuses immediately on the students and their learning experiences.

- The observer steps out of the instructional setting to record his/her observation, so as to minimize distractions during the observation.

- The observer does not record teacher names or other facts that would identify an individual with an observation code. The data are "school-wide" and should not be used in any manner for the purposes of teacher evaluation. All codes should be anonymous.

- All classes in session are observed once before the systematic observation cycle begins again, thus the importance of systematically covering the school then repeating that process multiple times.

- The observer does not record data during "transition" times between subject/content areas. For example, in schools governed by bells and class periods, observations are not made during the first five minutes or last five minutes of the instructional period. In schools without bells, usually elementary schools, observations during transitions from one subject to another are not recorded. The observer should simply return to the class a few minutes later to make the observation.

- The observer designates "core" classes and "non-core" classes on the IPI data recording form because the IPI data analysis spreadsheet creates profiles for core

observations, non-core observations, and all observations. Core classes are defined as learning settings in language arts, including spelling and reading/literacy, mathematics, science, and social studies. Non-core classes are all other settings, often referred to as "specials" in elementary schools, "exploratory" in middle schools, and "electives" in secondary schools.

The nuances of all coding protocols are not detailed herein due to space. Examples of these observational settings include classes with substitute teachers, special education teachers, student teachers, and multiple teachers working simultaneously with the same set of students, learning experiences outside the regular classroom, and learning experiences in the library or media center. Protocols are also established in the unusual situations where a definitive code is not apparent and describe how the observer can be consistent in such situations while creating the optimum profile.

Observers who collect IPI data using the IPI Rubric and protocols are expected to receive formal training in the use of the IPI process, including completion of an IPI observer training workshop and reliability rating of .80 or higher. A graduate class research project documented the differences in coder reliability with and without participation in the formal IPI data collector training. Members of a class of post-Master's graduate students in educational leadership were provided with copies of the written materials used in the IPI workshops and access to the IPI materials and research available on the Internet. The students were given a post-workshop reliability assessment. Their response accuracy levels ranged from .05 to .20 with a mean of .17. The next day the students participated in an IPI data collector training workshop. The students were again tested for coder accuracy. Their scores this time ranged from .80 to 1.00 with a mean of .93. The difference was considerably greater than hypothesized by the developers or the trainer who conducted the IPI training workshop. This example underscores the value of developing coder validity and reliability and the challenges of doing so simply by reading and studying the available materials. The training uses authentic scenarios and collaborative, higher-order learning experiences to develop a detailed understanding of each coding category that allows the coder to apply that understanding in the countless variations of classroom learning he/she will encounter. Compared to individuals who read the materials and study the rubric without the benefit of the scenarios, observations, and collaborative higher-order learning, the self-taught observers are significantly inaccurate. For that reason, the developers of the IPI grant permission to use the IPI process only to those who have successfully completed an IPI training workshop and received reliability rating of .80 or higher. Because dozens of workshops are presented each year at nominal fees, thousands of IPI data collectors are available in schools and state agencies to collect the profiles and facilitate faculty learning conversations.

IPI Profiles for Faculty Study, Reflection, and Goal Setting

Four questions were posed in the opening paragraph of this paper. This section addresses the third question: "How do you engage all faculty members in study and reflection about the data that will lead to improved instructional practices throughout the school?"

In preparation to study the IPI data, the critical initial decision is "Who will facilitate the faculty study, reflection, and goal setting?" The most appropriate person to facilitate the faculty IPI work session is a member of the faculty who has been trained in the use of the IPI process. This individual probably collected the data and has received preparation to lead the faculty discussion. Even more advantageous is a school with two or more teachers who have the background to lead the discussion. The individuals, however, who must be supportive but walk very gently in the leadership role for the IPI data, are the school principals. The astute principal sees great value to the use of the IPI profiles as a basis for faculty discussions, but too often is overly zealous about the value and implies that he/she "wants" the faculty to make changes and to do so as soon as possible. In other words, when the teachers view the principal as having ownership of the data, they may not embrace the data and critically and openly assess the implications. They will leave that up to the principal, who then finds it necessary to dictate the necessary changes because the teachers are not "coming up with quality ideas for change on their own." This effort to find the "quick solution" to the complex problem that requires time, trust, and development of knowledge to resolve may be well-intentioned by the principal, but generally results in little if any change in student learning. Principals must learn how to use the data to foster faculty-driven analyses and problem-solving; they must learn to empower the teachers with the instructional-learning data cultivate the organizational learning that can occur over time. Once a faculty feels empowered, they can learn together quickly and apply what they learned through their analysis of the IPI data to many other forms of data and issues to be resolved for the school. Then, they are well on their way to becoming a learning organization. If the principal imposes leadership perspectives over empowerment, fosters mistrust rather than trust, and implies urgency at the cost of deliberation, persistent and patience, the school will not realize the benefits that the IPI process can accrue. Principals must navigate the fine line between being perceived as supportive and encouraging successful change through study of the data, and being perceived as mandating faculty change based upon the data. The motivation for faculty study and the subsequent, lasting change must be internal, with external encouragement and support.

All faculty members should be involved in the processes of data-profile analysis, reflection, and problem-solving. Other individuals or groups such as non-certificated staff, parents, central office administrators or curriculum leaders, and sometimes students at the secondary level, might be included based upon existing school practices and norms. Participation by non-instructional staff may be appropriate in some settings, however, the deep reflection about instructional improvement and the subsequent honesty that must occur to foster change occurs best in most schools when only the instructional staff are involved in the study. As is the case in most forms of reflection and change, there is no definitive answer as to who "must" be involved. Omitting some faculty from the discussions because they have supervisory, coaching, or other responsibilities is usually a mistake. Every effort should be made to schedule these critical instructional discussions at times when all faculty members can participate. Teachers often grow as much from the discussions as from the conclusions. Through the discussions commitment to change evolves.

Following are some recommended steps for engaging all teachers in purposeful, structured study, reflection, and problem-solving based upon the IPI profiles. These steps may be completed during one-hour work sessions such as faculty meetings or during longer professional development sessions. The goal for these work sessions is to analyze the IPI profiles and develop a plan of action for instructional change. For schools and districts requesting support on how to facilitate those learning conversations, the Middle Level Leadership Center provides half-day professional development.

- Review and discuss with the whole faculty the IPI categories and the protocols used to collect the IPI data. This review of the categories and protocols can be brief, usually about 10 minutes total.
- With the faculty divided into small groups of 5-8 per group, ask each group to discuss positive findings from the data. The facilitator might describe it as concepts we should celebrate. Ask each table to list their positive findings on poster paper, share out the groups' findings, and compile a school-wide list of positive findings from the data on poster paper.
- Distribute five (or more) stick-on dots (marking pens can also be used) and ask each participant to use their dots to identify the most significant items on the list. Discuss briefly the items most frequently identified and why the faculty should celebrate those findings.
- Repeat the above process, this time asking each group to discuss the issues of concern (more negative findings) from the data. Repeat the posting, sharing-out, and compiling of a school-wide list of concerns. Provide the faculty with more dots and use them to identify the items of most significant concern.
- Using the list of most significant concerns (by identifying the issues with the most dots), ask each small group to brainstorm two or three strategies for addressing the top three or four issues.
- Share-out and discuss the groups' recommendations, writing the key suggestions on a projection system, overhead, or poster paper.
- If time permits, ask the faculty to discuss in small groups other forms of data that support or reject the information from the IPI profiles. Share-out and discuss the examples as a faculty, recording the examples on a projection system, overhead, or poster paper.
- After the faculty discussion, be sure to type up the faculty's comments from the poster papers and share the compilation with the faculty as soon as possible, definitely within two school days.
- In a few weeks or another two or three months, collect another set of IPI profile data and engage the faculty in similar discussions. However, this time, move the conversation toward a deeper analysis of the forms of learning experiences for students that match the higher-order categories of the IPI. Use similar processes for facilitating the analysis and discussions, recording the thoughts of the groups and whole faculty, and returning those thoughts back to the faculty as soon as feasible.
- In subsequent data collections and faculty discussions, begin to look at the data from a longitudinal view. Continue to look for positives and concerns from the data and continue to discuss, record, and share back the faculty's comments and thinking. In addition, near the end of the school year, lead one discussion of the

goals for next year and set some appropriate targets for each IPI category that would continue to move the learning experiences for all students toward a higher level of engagement and thinking. Once goals are identified, discuss the forms of professional development that would support achieving the goals and design one or more simple action plans if that seems helpful in accomplishing the stated goals. In addition to needed professional development, the action plans might include tasks and events, responsibilities, and timelines for accomplishing the strategies. Discuss the plan openly, share it in writing with faculty, and develop a system for monitoring progress for each goal.

The above is not meant to be a prescription but rather a set of suggested practices for engaging the faculty in the important discussions that can occur based upon the IPI data profiles. Whole-faculty discussions can be supplemented with additional small group discussions in departments at the secondary level, interdisciplinary teams at the middle level, or grade level teams at the elementary level. The findings from those groups can be added to the plan of action by the school improvement team or shared with the faculty during the discussions or work sessions. Different strategies work better in different school cultures. But whatever the strategy, it should help to move the schools' culture toward one of openness, focus on learning, and collaboration. Those are important characteristics of cultures in highly successful schools. (Peterson & Deal, 2002)

IPI Data from Typical and Exceptional Schools

The natural question that arises when a faculty begins to study its school data is "What are the typical IPI profile percentages for each category in schools similar to our school?" Additional questions such as the following are often asked. "Is it common for the profiles to be so different between core and non-core classes?" "Are profiles different for elementary, middle, and high schools?" "Are profiles different in schools with higher student achievement compared to schools with lower student achievement?"

Data for these questions are provided in this section, but the reader must be aware of purposeful terminology used throughout the section. Many of the data presented are described as "typical." Typical data are findings common in schools that have shared their IPI profiles with the Middle Level Leadership Center when they use the IPI in their schools. Typical also represents schools that have participated in MLLC projects where IPI profiles have been used. In other words, the typical profiles represent what is common among users, but typical does not mean an empirical average of percentages from a random set of schools. The "typical" findings are presented in "ranges" such as 15-25% rather than a specific percentage.

In contrast to the "typical" data shared in this section, some of the tables provide data from specific types of schools and some of the data have been statistically tested for significance. All of the data in this section can be of value to a faculty as long as the faculty members understand that the most critical question to be asking is not at all about comparisons to other schools, but rather a more basic question such as: "Given our expectations, what goals can we establish for our school that will make a difference for our students immediately and over time?" With that explanation as a caveat, the findings in this section are cautiously shared.

Table 1 is the most generic representation of the IPI data, providing "typical" profile data from elementary, middle, and high schools for all data (core and non-core) in schools from all types of settings, including rural, suburban, and urban and schools with various student populations from very small to very large. While it is interesting to note some patterns of difference between the levels, conclusions should not be drawn from these data because they were not randomly collected under controlled research conditions.

Table 1
Typical Percentages for IPI Data in Elementary, Middle, and High Schools (April, 2004)

IPI Category	Elementary Schools	Middle Schools	High Schools
Student Active Engaged Learning	15-25	15-20	15-20
Student Learning Conversations	3-5	3-5	3-5
Teacher-Led Instruction	35-40	35-45	30-40
Student Work with Teacher Engaged	20-30	20-30	15-20
Student Work with Teacher Not Engaged	5-10	10-20	15-20
Complete Disengagement	3-8	5-10	5-15

The data presented in Table 2 provide ranges of typical differences between core and non-core classes and more effective and less effective schools. The more effective and less effective schools were designated based upon available student achievement data in those schools. Schools in this table are also from the varied types of educational settings, including elementary, middle, and high schools and rural, suburban, and urban settings, as well as small, medium, and large enrollment schools. As previously cautioned, while it is interesting to see the patterns in the table, conclusions should not be drawn from these data because they were not randomly collected under controlled research conditions.

Table 2
Typical Percentages for IPI Data for Core, Non-Core, More Effective, and Less Effective Schools (January, 2005)

IPI Category	Typical	Core	Non-Core	More Effective	Less Effective
Student Active Engaged Learning	15-20	<15	<25	>25	15-20
Student Learning Conversations	3-5	5-10	<5	5-10	<5
Teacher-Led Instruction	30-45	>40	<40	35-45	30-40
Student Work with Teacher Engaged	20-30	>25	<25	15-25	>25
Student Work with Teacher Not Engaged	10-20	>20	<20	5-10	10-20
Complete Disengagement	5-10	>5	<5	<3	>5

The data in Tables 3, 4, and 5 are from middle-level schools that participated in Project ASSIST and the National Association of Secondary School Principals' National Study of Highly Successful Middle Level Schools and Their Leaders. Both studies were conducted by the Middle Level Leadership Center. The six schools from the NASSP study were identified through an extensive national search of highly successful middle level schools and a subsequent confirmatory analysis of multiple forms of school data. The IPI data for the six schools were collected in 2002 during two-day site visits to the schools after the schools were identified as exemplary. The five middle schools from

Project ASSIST consistently had student achievement in the bottom five percent of middle level schools in a mid-western state. The IPI data were collected in the five schools in 2003 as baseline data before the beginning of a multi-year school improvement project for each school. Unlike the data presented in Tables 1 and 2, the data in Tables 3, 4, and 5 from these two "outlier" sets of schools were collected in controlled research conditions and were analyzed for significant differences. Even with a relatively small number of schools to analyze, the findings provide important insight about the differences in schools where students are relatively unsuccessful and schools where students are relatively successful. As is evident from the tables, the tests of differences for means were significant for most comparisons.

The more obvious differences between the two sets of schools presented in Table 3 are for the categories of Student Active Engaged Learning, Student Work with Teacher Engaged, and Complete Disengagement. The percent of observations in the highly successful schools for Student Active Engaged Learning was nearly twice that for the very unsuccessful schools while the percentages of observations for Student Work with Teacher Engaged were essentially reversed, with considerably more observations in the very unsuccessful schools. The most glaring difference between the two sets of schools may be the data for the Complete Disengagement category where the observations for the very unsuccessful schools was more than eight times that of the highly successful schools.

Table 3
IPI Data for the Six IPI Coding Categories from Highly Successful and Very Unsuccessful Middle Schools (February, 2005)

IPI Category	Highly Successful	Very Unsuccessful	Significance Level
Student Active Engaged Learning	29.3	16.0	.070
Student Learning Conversations	3.3	0.2	.004*
Teacher-Led Instruction	40.5	33.2	.197
Student Work w/ Teacher Engaged	17.3	28.4	.002*
Student Work w/ Teacher Not Engaged	8.5	13.6	.309
Complete Disengagement	1.0	8.4	.000*

The data in the first two columns of Table 4 are organized in pairs that reflect the original broad themes of the IPI. The Student Engaged Instruction grouping includes categories five and six and represents the total percentages of higher-order learning. The difference is clearly significant. The second grouping, Teacher Directed Instruction, is categories three and four and is clearly different but not significant at the .05 level. The third grouping is labeled disengagement and includes categories one and two. Again, the difference is clearly significant. In essence, students in more successful schools are significantly more engaged in higher-order learning experiences than students in less successful, low-achieving schools. On the issue of the categories that merge teacher disengagement and student disengagement, the students and teachers in the low-achieving schools are significantly more likely to be disengaged than those in higher achieving schools.

Table 4

IPI Data Merged for the Three Broad Themes from Highly Successful and Very Unsuccessful Middle Level Schools (February, 2005)

IPI Category	Broad Themes	Highly Successful	Very Unsuccessful	Signif. Level
Student Active Engaged Learning	Student Engaged Instruction	32.6	16.2	.046*
Student Learning Conversations				
Teacher-Led Instruction	Teacher-Directed Instruction	57.8	61.6	.052
Student Work w/ Teacher Engaged				
Student Work w/ Teacher Not Engaged	Disengage-ment	9.5	22.0	.035*
Complete Disengagement				

Perhaps the most informative analysis is found in the differences between the two sets of schools when the data are grouped into categories 4, 5, and 6 and categories 1, 2, and 3. For both category groupings, the differences are significant. Students in highly successful schools are significantly more likely to be engaged in higher-order thinking with teachers who are actively teaching the students. Students in less successful schools are more likely to be doing seatwork with or without the teachers' support or disengaged from learning. This grouping is especially interesting when the ratio of percentages between the highly successful schools and the very unsuccessful schools are compared. In the highly successful schools the ratio of categories 4-5-6 to categories 1-2-3 is approximately 3:1. In the very unsuccessful schools, the ratio is almost exactly 1:1. These findings provide a very strong argument that student learning experiences in schools with higher achievement engage students more frequently in higher-order learning and experiences where the teacher takes an active role in leading the learning. In less successful schools, the students are more frequently engaged in more passive learning experiences or disengaged. These data paint a very different picture of instruction in high achieving and low achieving schools.

Table 5
IPI Data Merged into Two Divisions of categories 4-5-6 and 1-2-3 from Highly Successful and Very Unsuccessful Middle Level Schools (February, 2005)

IPI Category	Highly Successful	Very Unsuccessful	Significance Level
Student Active Engaged Learning	73.1	49.4	.004*
Student Learning Conversations			
Teacher Led Instruction			
Student Work w/ Teacher Engaged	26.8	50.4	.006*
Student Work w/ Teacher Not Engaged			
Complete Disengagement			

Ineffective Use of IPI Process

There is a fine line between the effective use of any tool or process for change and the misuse of that same tool or process. The IPI process is an easy victim for "potential misuse." Over the ten years of use, several concerns have surfaced as schools implement, or more accurately "try" to implement, the IPI process.

The most common concern is the collection of data by individuals who lack observer/coder reliability. Too often an experienced educator will find the IPI on the MLLC website or perhaps attend a presentation about the IPI at a national conference. To that experienced educator, the six coding categories of the IPI appear to be an obvious set of statements that can be easily recognized and documented in any learning setting. That might be the case if the observer wanted to make one or two observations and have a conversation using the observation as an example. Or if the observer did not have to code that same learning experience in the same way a few hours later or a few months later. In addition, if the observer was the only individual ever collecting data, then there would be no concern that that individual's codes might be different from the codes of another data collector. The stakes are too high to have inconsistency across observations or across observers. In the IPI process the observer may make 150 observations on a given day and then repeat that process multiple times over the next year or two. One observer may collect data in a school in the morning and another may collect the data that afternoon. One observer may collect a school's data in September and another may collect the data in January. Without established protocols and without a process to systematize the coding of the observations, including numerous "atypical" learning experiences that must be coded to an established protocol, the validity (accuracy) of the observers' codes and the reliability (consistent accuracy) will produce profiles with significant error and could cause faculty to reflect and make critical, long-term decisions based upon bogus data. Such errors are not acceptable. No school can afford to study profiles of learning across the school and then design change based upon faulty data.

The IPI observer training is a full-day workshop designed to build a thorough understanding of the IPI process and result in a high level of coder reliability by day's end. The number of participants in each session is small and the work is structured, hands-on, and authentic. Participants begin with an understanding of the process and protocols, develop initial skills through practice in the classroom using observation scenarios, refine skills through practice in a school setting, and then return to the classroom to discuss the effective use of the data and take a final assessment that produces a reliability rating. For the purposes of collecting school-wide data and creating profiles for school improvement in individual schools, a rating of .80 is expected. For collecting research data, whether for the Middle Level Leadership Center or other projects, a reliability rating of .90 is expected. Individuals who complete the observer training workshop with reliability ratings below these standards are asked to repeat the training process and/or refine their skills through "partner-coding" until their reliability is acceptable. Workshop participants are also provided with a CD that includes electronic copies of all of the workshop materials, a detailed list of references and recommended readings, and other materials that will support their effective use of the IPI.

A second concern noted over the years is the ineffective use of the profiles, which typically falls into one of two categories. One ineffective use is the absence of engagement of the faculty in the study and use of the data. Principals and/or central office administrators collect the data, generate the profiles, study the profiles and then file them, or at best, use them in a state report. Either way, instructional change does not occur, therefore, student learning is not enhanced. The other ineffective use occurs when the faculty members do have a chance to see the data but their engagement with the data are not "facilitated" in a manner that produces results. They see the data, talk about it for

a while, and then move on to other topics during the faculty work session. Little, if any, deep reflection or collaborative conversations occur and thus, the likelihood of instructional change is minimal.

Closing Thoughts---The Research Road Ahead

In recent years the IPI process has been recommended in two national principal publications (National Association of Secondary School Principals, 2004, 2006). It has also been used extensively in several large urban school systems and in hundreds of suburban, small city, and urban districts. State departments of education in four Midwestern states recommend the process for their schools in jeopardy of not meeting academic yearly progress and in their non-jeopardy school improvement initiatives. The regional educational agencies in those states regularly provide professional development to their teacher-leaders and principals. In one state, the National Board Certified teachers are being trained in the process so they can be pro-active leaders for instructional change in their schools. Most of these initiatives centered on the use of the IPI have unfolded in the past three or four years. Now that hundreds of schools across the Midwest are using the instrument, and hundreds are using the IPI process in large urban district, the "n" for research is reaching a critical mass. Research studies currently under way include an analysis of the relationships between IPI profiles and student achievement as measured by state standardized assessment in three Midwestern states. In one state, data are available for approximately 300 schools and in another data are available for more than 200 schools. The data collection process is currently under way in those states. In the third state, aggressive training of leaders sponsored by regional educational agencies will produce a population of more than 300 schools within the next year, again setting the stage for analysis of the IPI profiles with state tests of student achievement. In one major urban district, every principal and many teacher leaders have been trained in the process. In the nearly 100 schools, data from the IPI profiles, from the "valued-added" assessments, and from the state achievement measures in language arts and mathematics are now available and in preliminary analysis. Initial review of the data by the district leaders reports positive correlations between the higher-order IPI categories, "value-added measures" and student achievement.

School improvement is complex mix of many strategies and components articulated together into a sum larger than its parts. However, the potential of a single tool or process should never be overlooked or underestimated. In the near future, data from three Midwestern states and from urban settings in four other states will provide valuable insight about the utility of the IPI as a tool for profiling student learning and, more importantly, as a tool for promoting faculty reflection and problem-solving. Once the latter is documented, then the next step will be to study the organizations for a period of time to determine the degree to which the effective use of the IPI fosters organizational learning and increases student achievement.

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