

Bronx School of Science Inquiry and Investigation

FINAL REPORT



New York City Department of Education External School Curriculum Audit | August 2011

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Introduction

About This Report

This final report is the result of an external school curriculum audit (ESCA) of Bronx School of Science Inquiry and Investigation conducted by Learning Point Associates, an affiliate of American Institutes for Research. This audit was conducted in response to the school being identified as being in corrective action under the New York State Education Department differentiated accountability plan, pursuant to the accountability requirements of the Elementary and Secondary Education Act, as reauthorized by the No Child Left Behind Act. The utilized ESCA process was developed for and carried out under the auspices of the New York City Department of Education (NYCDOE) Office of School Development, within the Division of Portfolio Planning.

About Bronx School of Science Inquiry and Investigation

Bronx School of Science Inquiry and Investigation (X331) is located in New York City, in the Bronx (in Community School District 10). The school serves approximately 379 students in Grades 6–8. The school first opened during the 2004–05 school year. That year, the school served only 6th-grade students; the school added a grade each year until the school reached full capacity in the 2006–07 school year. Seventeen percent of the students are English language learners, and 22 percent are identified as students with disabilities. Bronx School of Science Inquiry and Investigation shares a school building with PS. 306 (K–5); each school has its own floors, and the two schools share some common spaces.

In 2009–10, Bronx School of Science Inquiry and Investigation did not make adequate yearly progress (AYP) in English language arts (ELA) for all students and subgroups. In 2010–11, Bronx School of Inquiry and Investigation’s state accountability status was designated as Corrective Action (Year 1).¹ Because the school was designated as in corrective action, the school participated in the ESCA. Data collection for the audit took place from February through June of 2011.

The school’s vision is “Be curious!” according to the 2010–11 Comprehensive Educational Plan (p. 5).²

¹<https://www.nystart.gov/publicweb-rc/2010/70/AOR-2010-321000010331.pdf>. Accessed on June 22, 2011.

²http://schools.nyc.gov/documents/oaosi/cep/2010-11/cep_X331.pdf. Accessed on June 22, 2011.

Audit Process at Bronx School of Science Inquiry and Investigation

The ESCA approach utilized at the middle school level examines five topic areas: student engagement, curriculum and instruction, academic interventions and supports, professional learning and collaboration, and support for transitioning students. Data were collected at the school level through teacher surveys, administrator interviews, classroom observations, and an analysis of documents submitted by Bronx School of Science Inquiry and Investigation. From these data, Learning Point Associates prepared a series of reports for the school's use.

These reports were presented to the school at a co-interpretationSM meeting on May 25, 2011. During this meeting, eight stakeholders from the Bronx School of Science Inquiry and Investigation community read the reports. Through a facilitated and collaborative group process, they identified individual findings, then developed and prioritized key findings that emerged from information in the reports.

The remainder of this report presents the key findings that emerged from the co-interpretation process and the actionable recommendations that Learning Point Associates developed in response. Please note that there is not necessarily a one-to-one connection between key findings and recommendations; rather, the key findings are considered as a group, and the recommended strategies are those that we believe are most likely to have the greatest positive impact on student performance at Bronx School of Science Inquiry and Investigation.

Key Findings

After considerable thought and discussion, co-interpretation participants determined a set of key findings. These key findings are detailed in this section.

Critical Key Findings

CRITICAL KEY FINDING 1:

The school's instruction lacks rigor, including opportunities for students to engage in higher-order thinking and apply feedback. There is also a lack of sustained student engagement.

Critical Key Finding 1 is supported by information from classroom observations and teacher survey results. In more than 90 percent of classrooms observed, content understanding was addressed inconsistently. Instruction only sometimes focused on broad concepts and how those concepts tie to prior knowledge. Discussion and explanations were brief and did not always communicate the essential characteristics of concepts or organize information well. Of the 15 classrooms observed, five (33 percent) were assigned a low rating due to limited opportunities for students to analyze, evaluate, or use other higher-order thinking. In another 60 percent of observed classrooms, the teacher occasionally provided opportunities for students to use higher-order thinking or solve complex problems; or the teacher sometimes modeled, encouraged students, or provided opportunities for self-evaluation. The majority of classrooms showed evidence of teachers giving feedback to students on the correctness of responses, but teachers did not encourage deeper understanding consistently; occasionally in these classrooms, there was no feedback or feedback was perfunctory. In 75 percent of the classrooms observed, student engagement was present but not sustained.

Teacher survey results further echo these observations. Half of teachers indicated their students never or almost never participate in field work, and nearly 30 percent reported no student work on models or simulation. About 40 percent of teachers responded that students never or sometimes build on each others' ideas during class discussion. One quarter of teachers reported that students write reflections daily or almost daily, and another 36 percent reported that students do so at least once a week. The remaining 39 percent reported that students write reflections once a month or less.

CRITICAL KEY FINDING 2:

There is no formal system for analyzing achievement data and planning for instruction.

Critical Key Finding 2 is supported by information from school interviews, a review of the school's submitted documents, and teacher survey results. Documents and teacher surveys revealed the school utilizes multiple forms of assessment (periodic, classroom or teacher-created assessments, standardized assessments). Document review also suggested that analyses of student data are conducted on a unit basis and provide teachers with data to use in unit and lesson planning for more whole-class, group, and individual instruction. However, teacher survey results showed inconsistent use of various data sources, including

data from classroom assessments, teacher-created assessments, and standardized exams. Document review and interviews did not reveal a system for analyzing or tracking data. (There may be a citywide system next year.)

CRITICAL KEY FINDING 3:

Instruction does not consistently include connections to student experiences, meaningful peer interactions, and opportunities for student responsibility.

Critical Key Finding 3 is supported by information from classroom observations and teacher survey results. Observed classrooms did not connect to student experiences, and only a few classrooms encouraged meaningful peer interactions. Some classrooms provided students with limited choice and responsibility. Further evidence of limited classroom interactions was provided in the teacher survey, in which teachers indicated that students never or sometimes build on each other's ideas during class discussion.

CRITICAL KEY FINDING 4:

There is not a coherent academic intervention services (AIS) system that aligns student assessment results—identification of student needs, instructional programs, and ongoing monitoring of effectiveness. Parameters for AIS exist, but documentation of their effectiveness was not evident.

Critical Key Finding 4 is supported by information from school interviews, a review of the school's submitted documents, and teacher survey results. School interviews identified several programs and initiatives to support students during the school day, after school, and on Saturdays. However, a review of the documents showed no evidence of measures or evaluations to monitor effectiveness of the programs. Further, about 24 percent of teachers responded that students will most likely receive academic supports and services that are effective. Seventeen percent of teachers disagreed that the principal carefully tracks student academic progress.

Positive Key Findings

POSITIVE KEY FINDING 1:

Parents are informed of the progress of their students.

Positive Key Finding 1 is supported by information from a review of the school's submitted documents. Students keep portfolios of work from ELA, mathematics, social studies, and science, which they share with parents at student-led conferences. About 80 percent of families attend student-led conferences.

POSITIVE KEY FINDING 2:

Programs and resources exist for student support outside of the classroom; however, data are limited on the effectiveness of these supports.

Positive Key Finding 2 is supported by information from school interviews and a review of the school's submitted documents. According to respondents, advisory groups meet daily in small groups to bond with students and teachers; these groups work on character

development, professionalism, responsibility, integrity, discipline, and empathy. Each grade also has a guidance counselor who loops with students each year. However, neither the interview respondents nor the submitted documents provided evidence of how the behavioral intervention plan supports and encourages the development of social and behavioral skills among students.

POSITIVE KEY FINDING 3:

Teachers collaborate formally and informally.

Positive Key Finding 3 is supported by information from school interviews, teacher survey results, and a review of the school's submitted documents. Interview respondents indicated that teachers plan collaboratively in weekly meetings to share best practices. Respondents also suggested that buildingwide communication is expanding to include the possibility of joint learning walks and departmental teams. Documents showed evidence that teachers present case studies at department meetings. Close to 60 percent of surveyed teachers said they seek out each other to ask questions and learn new ideas.

Recommendations

Overview of Recommendations

During the Bronx School of Science Inquiry and Investigation co-interpretation meeting, participants prioritized some key findings that highlighted strengths of the school (Positive Key Findings 1, 2, and 3), in addition to other key findings that focused on areas in which the school can improve (Critical Key Findings 1, 2, 3, and 4).

When the voting on key findings was concluded at the co-interpretation meeting, the auditors asked the school team why a finding on comprehensive academic interventions (listed above as Critical Key Finding 4) received less votes while a key finding related to data use that was a component part of that AIS finding received more votes (see Critical Key Finding 2).

In the conversation that followed, school team members stated that they thought both key findings were very important. In voting on key findings, they chose the data use finding because they did not want that finding to get lost in the larger academic interventions finding. Co-interpretation participants also saw data use as a first step in implementing systemic academic interventions. In a conversation with the principal after the co-interpretation meeting, the principal stated that it would be useful for the auditors to include a recommendation on systemic academic interventions, in addition to recommendations related to the other key findings prioritized by co-interpretation participants.

THE FOUR RECOMMENDATIONS

With these issues in mind, Learning Point Associates auditors developed the following four recommendations:

1. Implement instructional strategies that increase opportunities for higher-order thinking, analysis and problem solving, and deeper content understanding.
2. Provide clear expectations and support for the schoolwide use of student achievement data for planning and delivering instruction.
3. Develop and implement specific strategies for incorporating appropriate student voice, choice, and opportunities for autonomy and leadership in the classroom.
4. Develop and implement a schoolwide system to identify students' specific learning needs using assessment data, provide multitiered academic interventions, and employ ongoing progress monitoring to address student needs.

Critical Key Finding 1 concludes with the sentence "There is also a lack of sustained student engagement." Although there is no recommendation that specifically focuses on increasing student engagement, research indicates that implementing Recommendation 1 (Instructional Rigor) and Recommendation 3 (Student Voice, Choice, Autonomy, and Leadership) will lead to improved student engagement.

These four recommendations are discussed on the following pages. Each recommendation provides a review of research, online resources for additional information, specific actions the school may wish to take during its implementation process, and examples of real-life schools that have successfully implemented strategies. All works cited, as well as suggestions for further reading, appear in the References section at the end of this report.

Please note that the order in which these recommendations are presented does not reflect a ranking or prioritization of the recommendations.

Recommendation 1: Instructional Rigor

Implement instructional strategies that increase opportunities for higher-order thinking, analysis and problem solving, and deeper content understanding.

LINK TO RESEARCH

Instruction that pushes students to engage in higher-level thinking leads to deeper learning for students (Marzano, Pickering, & Pollock, 2001; Newmann, Bryk, & Nagaoka, 2001; Pashler et al., 2007). Too often, particularly in schools where students are struggling, instruction focuses on lower-level thinking skills, basic content, and test preparation. Teachers of struggling student groups or tracks usually offer students “less exciting instruction, less emphasis on meaning and conceptualization, and more rote drill and practice activities” than do teachers of high-performing or heterogeneous groups and classes (Cotton, 1989, p. 8). Yet this focus on basic skills does not necessarily improve student achievement.

Several research studies were completed from 1990 to 2003 “which demonstrated that students who experienced higher levels of authentic instruction and assessment showed higher achievement than students who experienced lower levels of authentic instruction and assessment” (Newmann, King, & Carmichael, 2007, p. vii). These results included higher achievement on standardized tests (Newmann et al., 2001). It is also important to note that these results “were consistent for Grades 3–12, across different subject areas (mathematics, social studies, language arts, science), and for different students regardless of race, gender, or socioeconomic status” (Newmann et al., 2007, p. vii).

Teachers need to provide structured opportunities and time for students to take on higher-level cognitive work (Tomlinson, 2003). In discussing the *gradual release of responsibility model*, Fisher and Frey (2008) state that “the cognitive load should shift slowly and purposefully from teacher-as-model, to joint responsibility, to independent practice and application by the learner” (p. 2). This process allows students to become what Graves and Fitzgerald (2003) call “competent, independent learners” (p. 98).

There are several steps to ensure that students are being asked to complete this type of intellectually challenging work, which increases test scores and improves performance on authentic assessment measures as well. Newmann et al. (2001) define *authentically challenging intellectual work* as the “construction of knowledge, through the use of disciplined inquiry, to produce discourse, products, or performances that have value beyond school” (p. 14). Daggett (2005) agrees, stating that all students should be pushed “to achieve academic excellence, which ultimately boils down to applying rigorous knowledge to unpredictable, real-world situations, such as those that drive our rapidly changing world” (p. 5). Disciplined inquiry, which occurs in the classroom, requires that students “(1) use a prior knowledge base; (2) strive for in-depth understanding rather than superficial awareness; and (3) express their ideas and findings with elaborated communication” (Newmann et al., 2001, p. 15).

QUICK LINKS: Online Sources for More Information

Doing What Works: Providing
Research-Based Education
Practices Online (Website)
<http://dww.ed.gov/>

*Organizing Instruction and
Study to Improve Learning*
(Publication)
[http://ies.ed.gov/ncee/
wwc/pdf/practiceguides/
20072004.pdf](http://ies.ed.gov/ncee/wwc/pdf/practiceguides/20072004.pdf)

IMPLEMENTATION CONSIDERATIONS

1. Cultivate schoolwide high expectations for students.

- Align instruction with the New York State P–12 Common Core Learning Standards. According to NYCDOE (2011b), schools in New York City are set to have fully adopted the P–12 Common Core Learning Standards for students to take aligned assessments during the 2014–15 school year. These standards are internationally benchmarked and rigorous; they clearly explain what students at each grade level are expected to know and be able to do. Some schools were involved in pilot programs in 2010–11.
- Develop a shared understanding of instructional rigor through collaborative curriculum planning, design, and/or redesign. When developing or revising curriculum maps, identify opportunities for formative assessment tasks that encourage higher-level thinking for each unit of study.
- Through teacher collaboration, develop common student assignments that ask students to perform rigorous and authentic tasks.
- Through teacher collaboration, develop common student assessments that include rigorous and authentic summative assessment tasks.
- Monitor implementation of expectations through classroom observations, lesson plan review, and student achievement results on common formative assessments.

2. Provide professional development for teachers on instructional strategies that push students to engage in higher-order thinking.

- Provide ongoing professional development for teachers that describes the importance of pushing students to do higher-level thinking and provides strategies for how to do so. This training may be provided through ongoing professional development sessions and/or support of an instructional coach.
- Create clear expectations regarding how teachers should implement this professional development in the classroom (e.g., one strategy utilized each day as reflected in lesson plans, authentic assessments at the end of each unit).
- Identify how this professional development can be incorporated into scheduled teacher collaboration sessions.
- Monitor implementation of professional development through classroom observations, lesson plan review, and student achievement results on common formative assessments.

3. Develop examples of authentic intellectual work.

The following example can be used to help school leaders and teachers understand what authentic intellectual work might look like.

Examples of High-Scoring and Low-Scoring Measures of Authentic Intellectual Work

The research report *Improving Chicago's Schools: Authentic Intellectual Work and Standardized Tests: Conflict or Coexistence?* by Newmann, Bryk, and Nagaoka (2001) includes examples of two sixth-grade writing assignments: one that scored high and one that scored low on measures of authentic intellectual work. The authors conclude each example with a commentary of why the assignment received the score that it did.

High Scoring Writing Assignment

Write a paper persuading someone to do something. Pick any topic that you feel strongly about, convince the reader to agree with your belief, and convince the reader to take a specific action on this belief.

Commentary

In this high scoring assignment, demands for construction of knowledge are evident because students have to select information and organize it into convincing arguments. By asking students to convince others to believe and act in a certain way, the task entails strong demands that the students support their views with reasons or other evidence, which calls for elaborated written communication. Finally, the intellectual challenge is connected to students' lives because they are to write on something they consider to be personally important.

Low Scoring Writing Assignment

Identify the parts of speech of each underlined word below. All eight parts of speech—nouns, pronouns, verbs, adjectives, adverbs, prepositions, conjunctions, and interjections—are included in this exercise.

1. My room is arranged for comfort and efficiency.
2. As you enter, you will find a wooden table on the left.
3. I write and type.
4. There is a book shelf near the table.
5. On this book shelf, I keep both my pencils and paper supplies.
6. I spend many hours in this room.
7. I often read or write there during the evening...

Commentary

This assignment requires no construction of knowledge or elaborated communication, and does not pose a question or problem clearly connected to students' lives. Instead it asks students to recall one-word responses, based on memorization or definitions of parts of speech.

Reprinted from page 24 of *Improving Chicago's Schools: Authentic Intellectual Work and Standardized Tests: Conflict or Coexistence?* by Fred M. Newmann, Anthony S. Bryk, and Jenny K. Nagaoka, available online at <http://ccsr.uchicago.edu/publications/p0a02.pdf>. Copyright © 2001 Consortium on Chicago School Research. Reprinted with permission.

Further examples of authentic intellectual instruction, teachers' assignments, and student work can be found in the following source:

Newmann, F. M., King, M. B., & Carmichael, D. L. (2007). *Authentic instruction and assessment: Common standards for rigor and relevance in teaching academic subjects*. Des Moines, IA: Iowa Department of Education. Retrieved June 24, 2011, from <http://centerforaiw.com/sites/centerforaiw.com/files/Authentic-Instruction-Assessment-BlueBook.pdf>

Plainwell Middle School

Plainwell Middle School in Plainwell, Michigan, serves students in Grades 6–8. The school has had success in improving instructional rigor.

In 2005, Plainwell Community Schools implemented districtwide curriculum restructuring with professional development focused on using the research-based instructional strategies outlined in Robert Marzano's *Classroom Instruction that Works* (2003)... Some of the instructional delivery techniques that were adopted as part of this professional development include the use of nonlinguistic representations of abstract concepts and the use of higher-order questions to elicit student explanations. Teachers find Marzano's strategies to be compelling, noting the evidence of a significant correlation between increased student achievement and the use of research-proven instructional techniques. This approach lays the groundwork for a shift in staff culture, moving away from the use of personal intuition to the use of empirical, quantitative data to inform decisions around teaching and learning.

In 2005, social studies teachers at Plainwell Middle School decided to adopt a new curriculum aligned with Marzano's strategies.... Interactive slideshows are used as a way to actively engage students in new content learning, letting them participate in lectures by touching, interpreting, and acting out historical images and events projected onto a screen. The curriculum also supports vocabulary instruction with graphic organizers that connect definitions with visuals to help students understand and retain key terms. Some teachers...have modified the workbook graphic organizers to create their own "visual dictionaries"...

Higher-order questions are also used as an instructional technique through the new curriculum. Response groups are a structure that teachers use to facilitate small group discussion on controversial topics in history. Through a series of probing questions that require critical thinking and the use of evidence, teachers elicit student explanations that require analysis and application of historical information. Finally, students match up their decisions and viewpoints with actual decisions made in history.

In addition to these strategies, social studies teachers at Plainwell Middle School intentionally build review into daily lessons and assessments. Each day begins with a warm-up activity that quizzes students on a previous lesson.... When introducing a lesson, teachers also make sure to begin with a preview activity that they can refer back to when reviewing the material....

Curriculum restructuring at the middle school is carefully implemented to ensure success.... First, a less-is-more approach is taken, allowing ample time for teachers to learn and practice a single strategy before moving on to another one. Also, teacher training is conducted by lead teachers...who model classroom techniques, lead guided discussions, and set periodic objectives for teams. Instead of a passive "sit-and-get" approach, teachers actively practice the strategies and report to their teams about their progress. Finally, administrators support the efforts by aligning observational classroom walk-through forms to match the professional development focus, keeping the strategies at the center of conversation about teaching.

Description excerpted from the from the *Doing What Works* website at http://dww.ed.gov/media/CL/OIS/TopicLevel/case_plainwell_71508.pdf. This information is in the public domain.

Recommendation 2: Systematic Use of Data to Inform Instruction

Provide clear expectations and support for the schoolwide use of student achievement data for planning and delivering instruction.

Link to Research

Student assessment data is an essential tool in measuring the effectiveness of instruction; teachers can use these data to ensure the success of all students.

The Institute of Education Sciences (IES) Practice Guide *Using Student Achievement Data to Support Instructional Decision Making* (Hamilton et al., 2009) includes the following school-level recommendations regarding data use to improve instruction:

- “Establish a clear vision for schoolwide data use.”
- “Provide supports that foster a data-driven culture within the school.”
- “Make data part of an ongoing cycle of instructional improvement.” (p. 9)

Clear Vision for Schoolwide Data Use. Learning Point Associates and Educational Service Agency Alliance of the Midwest (2006) emphasize the need to do the following:

Make sure all staff members understand what their core responsibilities are and what their obligations are for learning to do that work better. Understanding this will make a big difference in how staff will seek, manipulate, present, and use data. (p. 21)

The principal and school leaders also should set the example of using data regularly. A study of the effects of leadership practices on student achievement by Mid-continent Research for Education and Learning (Waters, Marzano, & McNulty, 2003) shows “the extent to which the principal monitors the effectiveness of school practices and their impact on student achievement” to be one of the 21 leadership responsibilities significantly associated with student achievement (p. 12). Cotton (1988) agrees, “The careful monitoring of student progress is shown in the literature to be one of the major factors differentiating effective schools and teachers from ineffective ones” (p. 1).

Supports That Foster a Data-Driven Culture Within the School. Cultivating a culture of reflection and continuous improvement will help teachers feel comfortable using data. Young’s (2008) case studies identify “four dimensions of trust” that suggest how culture may or may not support teachers using the data system. To the degree that teachers think in terms of these four dimensions, they will be more likely to utilize a data system:

- “Other teachers have high standards.”
- “Other teachers won’t think I’m incompetent.”
- “Others will participate/reciprocate in response to my engagement.”
- “Problems I raise will be seen as collective problems.” (p. 99)

QUICK LINKS: Online Sources for More Information

Children First Intensive
(Website)

<http://schools.nyc.gov/Accountability/resources/childrenfirst/>

Doing What Works: Providing
Research-Based Education
Practices Online (Website)

<http://dww.ed.gov/>

*Using Student Achievement
Data to Support
Instructional Decision
Making* (Publication)

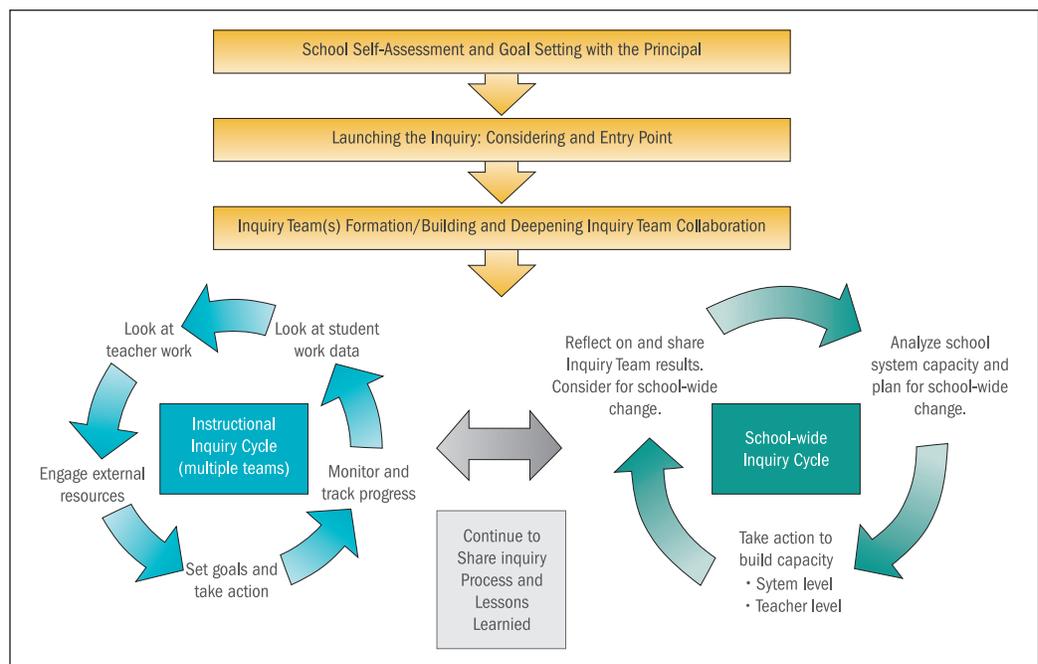
http://ies.ed.gov/ncee/wwc/pdf/practiceguides/dddm_pg_092909.pdf

Time also is an important factor in professional support. Teacher respondents cited in a U.S. Department of Education report on data use most often cited “lack of time to examine and reflect on data [as] the greatest barrier to data-driven decision making” (Means, Padilla, & Gallagher, 2010, p. 87).

Finally, “teachers need to learn how to obtain and manage data, ask good questions, accurately analyze data, and apply data results appropriately and ethically” (Lachat & Smith, 2005, p. 336). Through professional development and coaching, the school can support teachers in meeting these goals.

Data as Part of an Ongoing Cycle of Instructional Improvement. The NYCDOE Children First Intensive professional development plan established school-level Inquiry Teams at each school to support student achievement. NYCDOE uses the following graphic (see Figure 1) to illustrate the ongoing process of collaborative inquiry.

Figure 1. Collaborative Inquiry Process



Source: New York City Department of Education (2011a)

NYCDOE (2011a) defines *collaborative inquiry* as “a sustained process of investigation and action by a group of educators that empowers teachers to improve student achievement and close the achievement gap. Collaborative inquiry can look very different in different contexts, but there are some common threads across all teams, mainly that teachers evaluate the effectiveness of their collective work through the lens of student work and data.”

IMPLEMENTATION CONSIDERATIONS

- 1. Create a school culture of reflection and continuous improvement.** School leaders play an important role in creating a school culture of reflection and continuous improvement.
 - Assign teachers to grade-level and/or subject-specific collaborative inquiry teams, if they do not already exist, to analyze schoolwide data and grade-level/subject-specific data.
 - Identify how the work of collaborative inquiry teams will align with the schoolwide goals developed as part of the collaborative inquiry cycle, and as required for the Comprehensive Educational Plan.
 - Set aside time for collaborative data analysis. This analysis can take place during existing teacher collaboration time or could be done through Inquiry Teams.
 - Develop a standard data analysis protocol and schedule.
 - Provide resources to support teacher collaboration on data analysis, such as tracking sheets and/or a data coach.

- 2. Set clear expectations for data use.** Establish clear expectations regarding teacher use of data.
 - Establish a yearly, schoolwide schedule for assessments and screening procedures (e.g., three times each year).
 - Identify assessment instrument(s) that will be used to track student achievement. Screening instruments should be valid, reliable, and aligned with grade-level curriculum based on learning standards (e.g., state assessments, Acuity predictive assessments, or instructionally targeted assessments) or subject-specific and researched-based assessments (e.g., Woodcock-Johnson III Diagnostic Reading Battery, Qualitative Reading Inventory, Dynamic Indicators of Basic Early Literacy Skills).
 - Ensure that assessment results are shared with teachers in a timely way and that teachers have access to assessment results, if assessment results are not readily available on the Achievement Reporting and Innovation System (ARIS).
 - Describe how the school, teams, and individual teachers will be expected to use data (e.g., set goals, align resources, modify scope and sequence, identify students for tutoring, target students in lesson plans).
 - Provide professional development as needed on topics such as data analysis, item analysis, and instructional strategies.

- 3. Provide training on instructional strategies and differentiation.** “Just having student data is not sufficient if teachers do not have ideas about how to teach differently based on student performance” (Means et al., 2010, p. 87).
 - Provide professional development on instructional strategies and differentiation to give teachers a wealth of instructional options that they can call on to meet student needs.

- Adjust classroom instruction based on student progress. The IES Practice Guide *Using Student Achievement Data to Support Instructional Decision Making* (Hamilton et al., 2009) identifies the following changes to instruction that teachers can make to improve student achievement:
 - “Prioritizing instructional time;
 - Targeting additional individual instruction for students who are struggling with particular topics;
 - More easily identifying individual students’ strengths and instructional interventions that can help students continue to progress;
 - Gauging the instructional effectiveness of classroom lessons;
 - Refining instructional methods; and
 - Examining schoolwide data to consider whether and how to adapt the curriculum based on information about students’ strengths and weaknesses.” (p. 5)

4. Monitor progress. Track implementation of schoolwide data use policies to ensure that they are being implemented consistently and to provide teachers with continuous feedback and appropriate support.

- Establish a system of multiple methods for ensuring that teacher teams have what they need to engage in regular data analysis to inform instruction. This system could include inquiry team data logs, teacher reflection sheets on instructional strategies, and/or reports from the data coach.
- Consider implementing classroom walk-throughs by administrators, a lead teacher, or the data coach to see how data analysis and professional development are impacting classroom practice and to identify the best ways to support teachers moving forward. The intention of this process is formative teacher feedback to improve instruction—not to penalize teachers; thus, the school may wish to work collaboratively with its instructional staff to develop a related classroom walk-through protocol. By building in feedback loops, the school can ensure that effective decisions are being made, based on data. As Learning Point Associates and the Educational Service Agency Alliance of the Midwest (2006) state:

Data make change visible. Data provide an empirical lens that magnifies objective detail while distancing us from personality. Data can confirm if there is change or not. The smaller, the tighter, the more frequent the feedback loops that the data system supports, the more staff can make decisions, the more frequently decisions can be made, and the more likely that the decisions made will be better ones. (p. 5)

Shotwell Middle School

Shotwell Middle School, located in Houston, Texas, serves 1,200 students in Grades 7 and 8. Approximately 78 percent of the students are eligible for free or reduced-price lunch. The school has had success in using data systemically to inform instruction.

Administration and staff regularly collaborate in using data to support instructional decision making and assess program effectiveness. The administrative team provides leadership and clarifies expectations for data use, and core subject skills specialists support teachers in the process....

Data from six-week benchmark assessments are maintained in the districtwide data warehouse system, where teachers can access reports and analyze data during their departmental common planning time....

Skills specialists provide extensive support to teachers in using data and planning instruction. They meet with teachers weekly to analyze data, provide expert guidance and resources for lesson planning and instruction, and help to determine appropriate instructional strategies. The school engages in a clearly articulated reteach/retest policy in which teachers gather by department for an item-by-item test analysis. Based on the number of students who are missing objectives, the teachers identify areas of concern and steps for reteaching....

Administrators and skills specialists also use data to find areas of improvement for teachers. Using a standard format, teachers enter their lesson plans into a districtwide data warehouse system. Here, administrators and specialists can review the lesson plans and assess the instructional strategies planned. The school also uses a standard format for entering comments from observations of lessons. Based on alignment among lesson plans, observations, and student data, administrators and specialists can help teachers adjust their instructional strategies....

Staff conducts universal screening for Response to Intervention (RTI) to address three areas: the district's population of English language learners and students from low-income families, the state's high rate of dropout, and student migration. Screening results for RTI are entered into a database that creates reports indicating where students score in relation to grade-level averages. These data are then examined in conjunction with results on benchmark assessments and [the Texas state test]. Students who achieve below the average ranges are provided interventions with classroom, special education, and/or RTI teachers through a pull-out program or small-group instruction in the classroom. Each week, the RTI teacher conducts progress monitoring to determine ongoing student progress and continued areas of need. When students exit the pullout program, they complete the Exit Survey and Reflection. This survey asks students about which assignments helped them master the content, why these assignments were helpful, how challenging the assignments were, and how the pull-out program could be improved. Teachers review these surveys and make appropriate changes to the program.

Description excerpted from the *Doing What Works* website at http://dww.ed.gov/media/DDI/DDDM/TopicLevel/case_shotwell_revised.pdf. This information is in the public domain.

Recommendation 3: Student Voice, Choice, Autonomy, and Leadership

Develop and implement specific strategies for incorporating appropriate student voice, choice, and opportunities for autonomy and leadership in the classroom.

LINK TO RESEARCH

Empirical research has demonstrated that supporting student choice, autonomy, and leadership in the classroom can train students to regulate their own learning and deepen their cognitive process to improve academic achievement. Efforts to foster supportive autonomy consist of establishing a link between a student's classroom behavior and the resources that motivate them to succeed, such as personal interests, goals, and values (Reeve, 2010). This approach inherently involves students in their own learning process by creating a direct link between their personal motivations and classroom activities.

Autonomy-supportive instructional strategies have been shown to improve student engagement, conceptual understanding, academic achievement, and persistence in the classroom (Young, 2005). The goal of these strategies is to encourage students to engage in self-regulated learning, which involves students interpreting learning tasks, determining goals, and implementing strategies to meet goals (Young, 2005). Creating an autonomy-supportive classroom environment requires teachers to incorporate students' preferences, choices, curiosity, and challenges into lessons (Reeve, Jang, Carrell, Barch, & Jeon, 2004). Additional approaches include allocating time in a way that allows students to work in their own way, scaffolding student learning, engaging in feedback loops with students, and offering praise and encouragement to students (Young, 2005).

Enhancing student autonomy through autonomy-supportive strategies and lesson content that has relevance to adolescent lives allows students to align their inner motivational resources, classroom behavior, and academic achievement (Assor, Kaplan, & Roth, 2002; Stefanou, Perencevich, DiCintio, & Turner, 2004; Young, 2005). This strategy encourages students to understand schoolwork in the context of their own interests and goals, which has the potential to help students to develop self-regulation skills and learning strategies to facilitate their academic and professional success.

IMPLEMENTATION CONSIDERATIONS

Adolescence represents a critical period during which youth struggle to take on new responsibilities and learn decision-making skills while concurrently establishing a sense of self and identity. This period also marks a stage where adolescents are learning to regulate their behavior and cognitive abilities, which can be facilitated by incorporating autonomy-supportive strategies in the classroom (Zimmer-Gembeck & Collins, 2003).

The key to developing and implementing an autonomy-supportive classroom is to become familiar with the strategies that either encourage or inhibit student voice, choice, autonomy, and leadership. Table 1 provides an overview of the features and aspects that characterize an autonomy-supportive motivating instructional style versus a controlling motivating style.

QUICK LINKS: Online Sources for More Information

Collaborative for Academic,
Social and Emotional
Learning (Website)

<http://casel.org/>

Self Determination Theory
(Website)

<http://www.sustainengagement.com/>

*Classroom Observation:
Student Autonomy*
(Online video)

http://www1.teachertube.com/viewVideo.php?title=Classroom_Observation__Student_Autonomy&video_id=185325

Table 1. Defining Features of Two Types of Motivating Styles: Autonomy Supportive and Controlling

| Autonomy Supportive Motivating Style | Controlling Motivating Style |
|---|--|
| Definition: A teaching style that involves understanding and valuing the student's perspective during instruction | Definition: A teaching style that involves a teacher-centered approach to developing a class agenda and encouraging student compliance with the agenda |
| <i>Key Features</i> <ul style="list-style-type: none">■ Encourages a student's personal motivational resources■ Incorporates noncontrolling instructional language■ Promotes worth■ Acknowledges and accepts negative expressions and attitude | <i>Key Features</i> <ul style="list-style-type: none">■ Dependent on external motivational sources■ Utilizes language that is more controlling and pressuring■ Assertive |
| <small>Adapted from <i>Autonomy Support</i> by Johnmarshall Reeve (n.d.), available online at http://www.education.com/reference/article/autonomy-support/.</small> | |

Specifically, teachers can take the following actions to promote student autonomy in the classroom:

1. Foster relevance.

Teachers should make an overt effort to incorporate their students' interests, values, and goals into the learning process by learning about student concerns through informal and classroom dialogue (Learning Point Associates, 2005). Examples include communicating with the students regarding their feedback about classroom tasks and trying to help students understand how a task contributes to their personal objectives (Assor et al., 2002). Research has indicated that students are more likely to be cognitively engaged and use higher-order thinking skills when they find the subject matter interesting (Young, 2005).

2. Make learning authentic.

Instructional practice should build upon students' foundational knowledge (i.e., background, ideas, skills, and attitudes), challenge students, and also connect content to value beyond the classroom (Donovan & Bransford, 2005; Newmann, Marks, & Gamoran, 1995). Teachers should give assignments that have public or personal value to students (such as oral history projects or writing editorials for the local newspaper) and also are academically rigorous (Newmann et al., 1995).

3. Provide choice.

Teacher behavior should enable students to choose classroom activities and tasks that are consistent with their interests and goals. Providing students with the opportunity to understand how schoolwork can contribute to their personal goals increases their ability to work more autonomously (Assor et al., 2002). In addition, asking students for input on classroom activities allows teachers to become more aware of students' psychological needs and to incorporate those needs into the lesson (Reeve, 2010).

4. Promote independent thinking and permit student criticism.

Encouraging students to engage in independent thinking and criticizing lessons that they do not find interesting can provide teachers with opportunities to foster more in-depth conversations about classroom activities. These discussions may allow the teacher to make adjustments to lessons to increase student interest or engage in a dialogue with students about the importance of the task to make them value the assignment (Young, 2005). The overall goal of this strategy would be to increase the opportunities for student voice in the classroom and promote mutual communication between teachers and students regarding lesson content.

5. Be aware of how teacher behaviors can *inhibit* student voice, choice, leadership, and autonomy. Work to eliminate the following behaviors:

- **Micromanaging student work and behavior.** Teachers should avoid unnecessary intrusions related to how students approach their work. Such intrusions inhibit student expression. Students should have the opportunity to discover their natural working patterns in the context of classroom activities (Young, 2005).
- **Assigning tasks that lack relevance and interest to adolescents.** Students are less likely to be responsive to tasks that they do not find interesting or important. Thus, teachers should make an effort to communicate the importance of tasks that they assign and incorporate elements that are relevant to adolescent lives (Reeve, 2009; Young, 2005).
- **Forbidding student criticism and stifling independent thinking.** Teacher behavior that undermines student voice has the potential to inhibit students' ability to conduct self-regulated learning and self-expression. Inhibiting students' ability to express their opinions can be frustrating and interferes with their ability to make connections between classroom activities and their personal interests and goals.

Autonomy-Inducing and Autonomy-Suppressing Teacher Behaviors

Young (2005) describes the following teacher behaviors, which can either induce or suppress student autonomy.

Autonomy-Inducing Teacher Behaviors:

- Listening
- Integrating independent work sessions
- Facilitating peer-to-peer conversations
- Praising and encouraging evidence of improvement or mastery
- Scaffolding
- Creating a responsive environment that supports student questions and comments
- Incorporating student perspective and experiences

Autonomy-Suppressing Teacher Behaviors:

- Dominating learning materials
- Solving problems or answering questions before students have had a chance to work on them independently
- Directive rather than reciprocal feedback
- Interrupting student comments

Student-Generated Classroom Rules

One strategy for promoting student voice, choice, autonomy, and leadership in the classroom is to enable students to generate the rules of the classroom. Following are examples of two school districts that use student-generated classroom rules.

LINN BENTON LINCOLN EDUCATION SERVICE DISTRICT, EUGENE, OREGON

In 2007, the National Center for School Engagement held a contest titled “21 Ways to Engage Students in School,” which included a sampling of best practices designed to foster student leadership in schools, community-based groups, and public agencies. Linn Benton Lincoln Education Service District in Eugene, Oregon, had a winning strategy for creating student-generated classroom rules:

In Eugene, Oregon, students create a list of classroom rules to be followed. Each student signs off on the rules and is held accountable by fellow students. In addition, they developed their own “honor role,” in which students are recognized for doing their best, following directions, and not talking out more than 3 times a day. (National Center for School Engagement, 2007, p. 4)

MT. PLEASANT PUBLIC SCHOOLS, MT. PLEASANT, MICHIGAN

A teacher at Mt. Pleasant High School (see Ling, n.d.) developed a unit on creating student-generated classroom rules. The unit involves multiple examples of real-world relevance, including problem solving, democratic self-government, common good, collective rights, and public discourse.

Classroom Activities:

- Identifying students’ rights that have been recognized by the U.S. Supreme Court.
- Articulating the concept of jurisdiction in the context of classroom rules in a public school setting.
- Writing and prioritizing the most critical student rights and student behaviors that may threaten those rights.
- Developing strategies for protecting these student rights.
- Voting on a single set of rules that are appropriate for a variety of classroom settings.
- Monitoring the implementation of the rules with regard to protecting student rights and making adjustment based on majority decisions.

Proposed Unit Assessments:

- Classroom discussion: The ability of students to articulate key concepts orally.
- Group work: Determining how well students are working in groups to develop a list of rights, identify problem behaviors and create classroom conduct rules.
- Essay: Topics could include the relationship between rights and rules in a society, identify the most (or least) important rules that protect individual rights, propose changes to the process for developing class rules.

Teaching Tips:

Teachers should expect to play a role in developing rules with students and may need to generate additional “teacher rules” to maintain a supportive and productive working environment. However, note that any teacher-generated rules should be kept at a minimum to maintain student ownership over the lesson content.

Additional details about the specific lessons at Mt. Pleasant Public Schools are available through the *Learning to Give* website at <http://learningtogive.org/lessons/unit18/>.

Recommendation 4: Systemic Academic Interventions

Develop and implement a schoolwide system to identify students' specific learning needs using assessment data, provide multitiered academic interventions, and employ ongoing progress monitoring to address student needs.

LINK TO RESEARCH

Academic intervention services is defined by the New York State Education Department (2008) as “additional instruction which supplements the instruction provided in the general curriculum” for “students who are at risk of not achieving the state learning standards in English language arts, mathematics, social studies and/or science, or who are at risk of not gaining the knowledge and skills needed to meet or exceed designated performance levels on state assessments.” Across the state of New York, school leaders are searching for ways to enhance the current AIS programs in their schools to be able to identify students earlier, provide services to all students who require them, and measure student outcomes (Killeen & Sipple, 2004). Many schools begin to implement RTI after determining that their current structures and processes were not meeting their students' academic needs.

The incorporation of an RTI model into established interventions has been found to improve student academic progress; specifically, it has been found to increase the number of children who demonstrate proficiency on state accountability tests (Heartland Area Education Agency 11, 2004).

According to the National Center on Response to Intervention (Prewitt & Mellard, 2010), RTI is a model of academic supports that “integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavioral problems.” These goals are accomplished through the identification of students at risk for poor learning outcomes, provision of evidence-based interventions, regular monitoring of student progress, and regularly adjusting the intensity and nature of those interventions depending on a student's responsiveness.

In a national study conducted by the National Center on Response to Intervention (Prewitt & Mellard, 2010), middle schools across 28 states, including New York, participated in a study to identify current RTI practices, identify key factors of successful implementation, and identify RTI practices linked to positive student learning outcomes. Schools involved in the study chose RTI to (1) close the student achievement gaps, (2) meet AYP every year with every subgroup, or (3) address undesirable and disruptive student behaviors.

According to Prewitt and Mellard (2010), models of a responsive academic intervention program include a data-driven decision-making model that includes:

- The use of a schoolwide (universal) screening assessment to identify students at-risk for poor learning outcomes;
- Multitiered intervention programs and strategies that increase in levels of intensity;
- Frequent and ongoing progress monitoring to determine student progress and determine program efficacy;
- A team structure to organize and analyze student performance using progress monitoring data.

QUICK LINKS: Online Sources for More Information

Doing What Works: Providing Research-Based Education Practices Online (Website)
<http://dww.ed.gov/>

National Center on Response to Intervention: *What Is RTI?* (Web page)
<http://www.rti4success.org/whatisrti/>

National Research Center on Learning Disabilities: *Tiered Service-Delivery Model* (Web page)
http://www.nrclld.org/rti_practices/tiers.html

New York State Response to Intervention Technical Assistance Center (Website)
<http://www.nysrti.org>

Although research indicates minimum components for successful implementation of responsive intervention programs, no specific model of RTI, intervention program or strategy, or progress monitoring tool is endorsed by Learning Point Associates. Instead, schools are encouraged to consider these research-based recommendations to make specific decisions regarding the structure and design of intervention programs that will best meet the needs of their situations.

IMPLEMENTATION CONSIDERATIONS

Schools face a number of challenges when selecting a strategy for implementing academic interventions. Local regulations, contracts, and resources such as time, funding, and personnel all play a major role. Schools must make the determination, based on individualized circumstances, of what will ultimately work best. The most effective programs are those that are launched with clear leadership, built from careful planning, and supported with schoolwide awareness and professional development prior to full implementation.

1. Identify a team of school staff members who will lead the “rollout” of the intervention.

This leadership team may vary according to the school’s demographics. Some schools choose to include teachers who work with subpopulations (e.g., English language learners and students with disabilities), and other schools include teachers who teach in the content areas in which RTI is being implemented (e.g., ELA teachers from each grade, literacy coach, and reading specialist). Network resources and coaches also should be considered.

2. Conduct careful planning to ensure the success of the rollout.

School leadership defines the intervention infrastructure, scheduling, resources, funding, staffing, screening and progress monitoring assessments, intervention programs, tools, and strategies. This process includes developing explicit plans, processes, and procedures prior to implementation. Following is a checklist of topics to cover:

Data-Based Decision Making

- Establish a team structure, routines, and procedures for making decisions.
- Set explicit decision rules to decide when students will move in, out, or within interventions.
- Develop record-keeping systems that communicate student progress to stakeholders (e.g., student, parent, teachers, AIS coordinator).

Assessments and Screenings

- Establish a yearly, schoolwide schedule for assessments and screening procedures (e.g., three times each year).
- Identify screening instrument(s) that will be used to identify students for interventions. Screening instruments should be valid and reliable and aligned with grade-level curriculum based on learning standards (e.g., state assessments, Acuity predictive assessments, or instructionally targeted assessments) or subject-specific

and researched-based assessments (e.g., Woodcock-Johnson III Diagnostic Reading Battery, Qualitative Reading Inventory, Dynamic Indicators of Basic Early Literacy Skills).

- Establish participation criteria, select benchmarks or cutpoints at which risk is determined, and identify students who fail to meet benchmarks or fall below specified cutpoints.
- Create multitiered “entry points,” and establish multiple benchmarks to “slice the pie,” allowing students to receive targeted interventions that vary in levels of intensity (e.g., students 0 percent to 40 percent and 41 percent to 65 percent, or Level 1 and Level 2 on state assessments).

Tiered Intervention Programs

- Select evidence-based intervention programs and/or strategies to use with students who fall in various ranges based on the screening tool used.
- Determine the method for delivery of service (e.g., pull-out small-group instruction, afterschool instruction, Saturday program) and duration and frequency of service.
- Ensure that services and programs are “tiered” and increase in levels of intensity, which match the increasing needs of students.

Progress Monitoring

- Determine assessments to be used. Assessments can be both formal (e.g., AIMSweb, Acuity predictive assessments, or instructionally targeted assessments) and informal (e.g., checklist, running records).
- Establish a benchmark for performance (e.g., >40 percent and >65 percent). These benchmarks determine when students will move within, through, and out of tiers of interventions.
- Establish a timeline for progress monitoring. Monitoring may occur as frequently as every two weeks.

3. Create an awareness of the intervention, and provide adequate professional development to ensure that everyone is on board.

Many schools follow a “train the trainers” model in which selected staff members attend training and turnkey that training to other staff. Depending on which teachers and staff will be providing interventions, training also may be schoolwide. A critical component of the RTI implementation process is to ensure that stakeholders are clear about what is being implemented and why it is being implemented. School leaders must establish and communicate the goals and expected outcomes of adopting an RTI model while providing ongoing training and sufficient time for staff to fully understand the components and structures of a new intervention model. Successful implementation relies heavily on the ability of teachers and school leaders to implement RTI with fidelity.

Opportunities for AIS-related professional development should be embedded into the school’s annual professional development plan. Careful planning is essential when rolling out professional learning opportunities in the area of AIS.

4. Put the intervention plan into action.

Recommendations for implementation include “start small.” (See “Starting Small.”) This approach might include starting in one grade, one content area, or one classroom; or it could begin by focusing on one or two components of RTI. This decision should be what makes the most sense for the school based on existing resources, tools, and structures. At this phase, adjustments and adaptations are an ongoing part of the process.

Starting Small

Two approaches for “starting small” with an academic intervention program are to start with one essential component or to start with one small group.

Starting With One Essential Component

Build a model with a focus on one component at a time (e.g., screening, then data-based decision making, then progress monitoring, then intervention levels). Create a timeline for the implementation of each component, and align training for school staff with each phase of implementation.

Example

A middle school in the Midwest began the implementation of its RTI program by first focusing on reading programs and strategies for students identified as at risk. A second tier of interventions and progress monitoring were “rolled out” later in the year.

Starting With One Small Group

Implement the intervention program with a small pilot group. With this approach, it is best to investigate which components worked well and which need to be refined before scaling up to other classes, grades, or content areas.

Example

A Pennsylvania school implemented RTI in a small number of classrooms during the first year to determine what worked and what did not work. The school's interventions team focused on creating a balance between moving too slowly (which they felt would minimize the impact of RTI and decrease staff buy-in) and moving too quickly (which might overwhelm teachers and students).

Adapted from *Response to Intervention Practices in Middle Schools*, a 2011 presentation by Daryl F. Mellard and Sarah L. Prewett, available online at http://www.rti4success.org/ppt/WBNR_April2011.ppt. This document was produced by the National Center on Response to Intervention and is in the public domain.

School A's Intervention Program

School A is a middle school serving a total of 870 students in Grades 6–8. Approximately 50 percent of the students are eligible for free or reduced-price lunch, 22 percent are English language learners, and 11 percent are students with disabilities. In the 2005–06 school year, only 50 percent of the students at each grade level were proficient on state examinations and approximately 16 percent of the students at each grade level were “far below” grade level.

In response to comprehensive school improvement efforts, the school implemented a three-tiered RTI model in reading. At the end of the 2006–07 school year, more than 80 percent of students in all grades passed the state ELA test. Following is an outline of the intervention program developed by School A in response to student performance and learning initiatives.

TIER I

Intervention Program or Strategy

- Holt Rinehart and daily fluency instruction; general education classroom

Length of Instruction/Intensity

- 5 days per week for 72 minutes per day

Screening Tools

- Grade-level fluency passages, district writing prompts, Scholastic Reading Inventory, curriculum-based assessments administered three times each year

Data-Based Decision-Making Process

- RTI team (principal, related service provider, grade-level teachers) reviews scores in monthly grade-level meetings.
- Students who are two grade levels behind are placed into the next tier of interventions; students who are three grade levels behind are placed into the third tier of interventions.

TIER II

Intervention Program or Strategy

- *REWARDS, Read Naturally, Soar to Success*

Length of Instruction/Intensity

- 3 days per week for 72 minutes each day

Screening Tools

- Curriculum-based assessments administered three times each year

Data-Based Decision-Making Process

- Students are assigned to the programs based on identified skill deficit (comprehension, decoding, fluency).
- Students move between tiers based on progress monitoring scores.

TIER III

Intervention Program or Strategy

- *Language!, Read 180, High Point*

Length of Instruction/Intensity

- Daily for 144 minutes

Screening Tools

- Same as Tier II

Data-Based Decision-Making Process

- Students exit this tier after progressing within two grade levels of expectations (into Tier II).

Adapted from pages 58–59 of *Implementing Response to Intervention: Practices and Perspectives From Five Schools—Frequently Asked Questions*, by Kathryn Klinger Tackett, Greg Roberts, Scott Baker, and Nancy Scammacca, available online at <http://www.centeroninstruction.org/files/Implementing%20RTI%20Practices%20%26%20Perspectives%20of%205%20Schools.pdf>. This report was published in 2009 by the Center on Instruction and is in the public domain.

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Suggestions for Further Reading

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