

Model
Demonstration
Coordination
Center

Progress Monitoring Interventions for Elementary School Reading: An Illustration of the Model Demonstration Process

Project Findings in Brief

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Project Findings in Brief

The American public school system currently is the target of unprecedented investments¹ aimed at markedly improving the academic performance, high school completion rates, and postsecondary preparation of our students through the use of evidence-based programs and practices. Fortunately, this focus on educational improvement comes at a time when a click of a mouse gives practitioners ready access to information on evidence-based practices for a wide range of subject areas, grade levels, and subpopulations.²

It is interesting then, with all the access to information on “what works” in education, why actual instructional practices often do not reflect the best of what is known about effective teaching and learning for all children. This gap in the implementation of best practices has led some to conclude that, although “the science related to developing and identifying ‘evidence-based practices and programs’ has improved...the science related to implementing these programs with fidelity and good outcomes for consumers lags far behind” (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005).

Addressing the gap between what research indicates are effective programs and practices and what schools implement, as it relates to improving outcomes for children and youth with disabilities, is the charge of the Research to Practice Division of the Office of Special Education Programs (OSEP), U.S. Department of Education. In administering the Individuals with Disabilities Education Improvement Act of 2004 (IDEA, 2004), OSEP pursues a mission of “improving results for infants, toddlers, children and youth with disabilities ages birth through 21, by providing leadership and financial support to assist states and local districts” (U.S. Department of Education, 2007). An important part of that pursuit is the Research to Practice Division’s technical assistance, model demonstration, and dissemination activities.

Current Model Demonstration Activities

Beginning as early as 1970 and continuing through the reauthorization of IDEA 2004, Congress has authorized OSEP to conduct model demonstrations in early intervention and special education to improve early intervention, educational, and transitional results for children with disabilities [Sec. 661 (a)]. In IDEA 2004, model demonstrations were authorized to support OSEP’s technical assistance activities as follows:

applying and testing research findings in typical settings where children with disabilities receive services to determine the usefulness, effectiveness, and general applicability of such research findings. (Sec.663 (c) (1))

The purpose of model demonstration projects (MDPs) is to develop new practice, procedure, or program models on the basis of theory and/or evidence-based research. Each project then implements its model in typical settings, assesses impacts, and, if the model is

¹ For example, Race to the Top (<http://www2.ed.gov/programs/racetothetop/executive-summary.pdf>), the Investing in Innovation Fund (<http://www2.ed.gov/programs/innovation/factsheet.html>).

² For example, the U.S. Department of Education’s Doing What Works (<http://dww.ed.gov/>), What Works Clearinghouse (<http://ies.ed.gov/ncee/wwc/>), the National Dissemination Center for Children with Disabilities (<http://www.nichy.org/>), and the National Secondary Transition Technical Assistance Center (http://www.nsttac.org/ebp/evidence_based_practices.aspx).

associated with benefits, may go on to disseminate or scale-up the model. Since 2005, OSEP has funded four cohorts of MDPs, each focused on a single new and promising (or perhaps poorly understood or implemented) practice, procedure, or program that is deemed to have high potential for improving child outcomes.

This report focuses on the progress monitoring models for elementary school reading that were developed and implemented from January 2005 through December 2009 by the first cohort (C1) of MDPs. Progress monitoring is a research-based practice teachers use to assess students' levels and rates of learning and to evaluate the effectiveness of their instruction. Progress monitoring uses short, frequently administered, scientifically validated assessments that are sensitive to changes in student performance (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Within a Response to Intervention (RtI) framework, the models offer increasingly intensive intervention to students who, as progress monitoring data indicate, are not responding to the core instruction provided students in general education classrooms.

Cooperative agreements for progress monitoring models were awarded to the University of Minneapolis; the University of Oregon; and Lehigh University, in partnership with the University of Pittsburgh. Each university team implemented its model in a single school district during the 2006-07, 2007-08, and 2008-09 school years. The Minnesota and Oregon districts are referred to here by their state location abbreviations, MN and OR. The Lehigh University team implemented the Pennsylvania model in a district in the eastern part of that state, referred to here as PA-E, whereas the Pittsburgh team implemented the Pennsylvania model in western Pennsylvania, referred to as PA-W. Implementing schools are referred to by their district location and number (e.g., OR1, PA-W2).

The findings regarding C1's implementation experiences and their student and system-level outcomes are reported by staff of the Model Demonstration Coordination Center (MDCC) at SRI International, which was awarded a contract in 2005 to collect consistent data across MDPs in each cohort and across cohorts over multiple years and topic areas. MDCC worked with C1 to establish consistent design elements, such as sample definition and selection, data collection methods and timing, and instrumentation, and to synthesize cross-MDP data. Consistent data collection within a given cohort permits comparison of the relative ease with which the models were implemented with fidelity in participating schools and supports comparison of the relative outcomes achieved when the unique approach of each model was implemented.

Focusing MDCC Activities, Analyses, and Products

A set of evaluation questions and a conceptual framework for addressing them have focused and organized MDCC's work.

Evaluation Questions

MDCC developed a three-level series of evaluation questions. Level 1 questions are specific to each MDP within a cohort and were suggested to the MDPs as suitable questions to be answered by the project. Level 2 questions pertain to the process of developing and implementing models across the MDPs within a cohort and are addressed here. Level 3 questions are being addressed by MDCC across the MDPs in all the cohorts (Wagner et al., 2010). Table 1 presents the level 2 cross-MDP questions pertaining to C1.

Table 1. Progress Monitoring Model Implementation and Efficacy – Level 2 Evaluation Questions

Model Development
1a. How do the core intervention components of progress monitoring models differ?
1b. How do differences relate to the models' perceived: <ul style="list-style-type: none">• Relative advantage• Complexity• Compatibility with the destination organization and contextual environment• Social validity?
1c. How do these perceived differences relate to the fullness/fidelity of model implementation and to establishing conditions supportive of sustainability?
Implementation
2a. How do progress monitoring models differ with regard to: <ul style="list-style-type: none">• Strategies for recruiting destination organizations and introducing models• Professional development approaches• Approaches to ongoing support• MDP staffing strategies• Ways of learning from implementation experiences and adapting core implementation and intervention components?
2b. How do these differences relate to the fullness/fidelity of model implementation and to establishing conditions supportive of sustainability?
3a. How do organizations differ with regard to key characteristics: <ul style="list-style-type: none">• Children/families served• History with model-related practices• Organizational functioning• Staff and leadership• Resources relevant to the model• Climate/culture• Support for the model?
3b. How do organizations differ with regard to implementation outcomes—their ability to establish the following in support of implementation with fidelity and the potential for sustainability: <ul style="list-style-type: none">• Staff knowledge, attitudes, and actions/behavior• Organizational structures, processes, and culture• External relationships
3c. How do these differences relate to the fullness/fidelity of model implementation and to establishing conditions supportive of sustainability?
4a. How do model contexts differ with regard to: <ul style="list-style-type: none">• District and state support for or alignment with the model• District resources provided for model implementation and sustainability• Circumstances/authorities outside of the model that exert some control over implementation and/or sustainability?
4b. How do these differences relate to the fullness and fidelity of model implementation and to establishing conditions supportive of sustainability?

Table 1. Progress Monitoring Model Implementation and Efficacy – Level 2 Evaluation Questions (concluded)

Outcomes
5a. How do models, districts, and schools differ with regard to: <ul style="list-style-type: none"> • Student-level outcomes • System-level outcomes
5b. How do differences in core intervention and implementation components, destination organizations, and influences relate to differences in individual- and system-level outcomes?

A Conceptual Model of the Model Demonstration Process

MDCC has adapted a conceptual model for understanding the implementation of interventions that was developed by the National Implementation Research Network (NIRN) at the University of North Carolina, Chapel Hill (Fixsen et al., 2005). The NIRN conceptual framework specifies the key elements in the implementation process; the adaptation of this framework for model demonstration is presented in Figure 1.

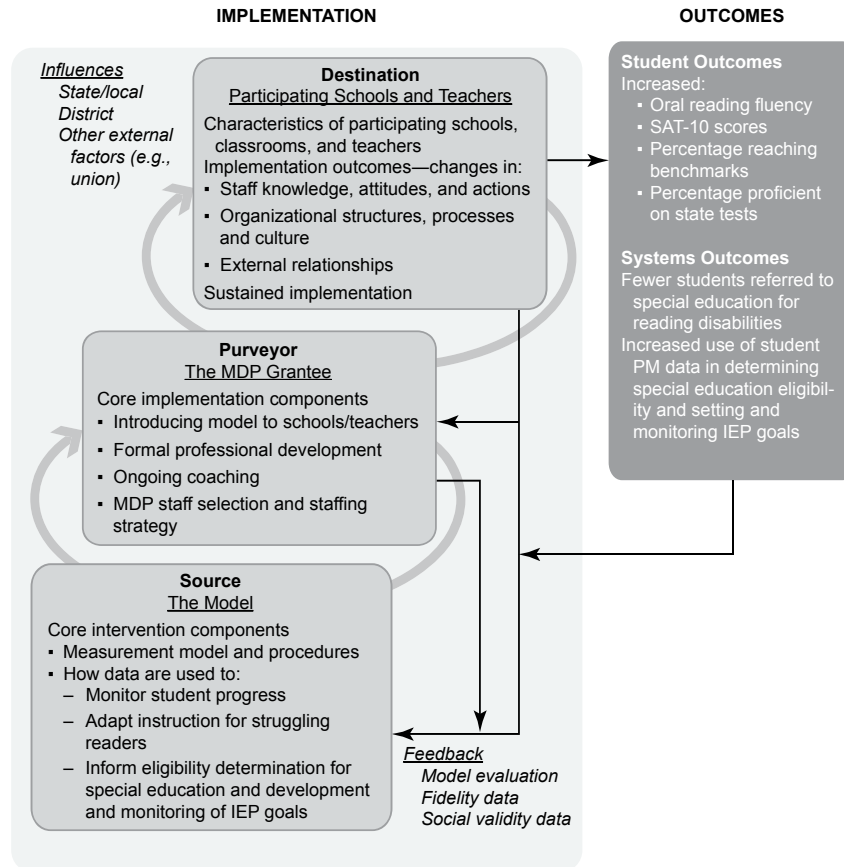
The conceptual model has four major elements. The “**source**” is the model being implemented, which has “core intervention components.” At the broadest level, regardless of the topic area of the models, these components include at least assessment and/or data collection activities, processes for using data and making decisions related to the model’s services, and the services and interventions themselves. Models within a particular cohort may have one or more additional intervention components.

The “**purveyor**” of the model is the MDP that is implementing a model. Whereas the model itself has core *intervention* components, the MDPs have core *implementation* components in their process of putting models into practice. These include strategies for (1) working with agencies and districts and introducing the models to schools, programs, and their staffs; (2) providing professional development, training, and support; (3) offering ongoing coaching to teachers in support of implementation; and (4) selecting and supporting MDP staff who work with school staff.

The framework posits that actions by the MDPs are the mechanisms through which the models are transmitted to the staff of participating schools (the “**destination**”). The MDPs’ participation schools differed markedly, differences that could be expected to influence the extent to which the model interventions were implemented, accepted, sustained, and effective in producing positive outcomes. A fourth element of the NIRN conceptual framework involves the model development context, or the “**influences**” on the implementation process. In the case of the progress monitoring MDPs, influence occurred from factors within the state (e.g., the presence of a state technical assistance network or an RtI initiative) and district (e.g., being a “laboratory” district for an MDP university).

In addition to these key elements, the NIRN model posits three **implementation outcomes** that would be expected to occur within the destination organizations when implementation is successful: (1) changes in the knowledge, attitudes, skills, and behaviors of practitioners and other key staff members within the implementing organization or system; (2) changes in both formal and informal organizational structures and cultures (e.g., values, policies, decisionmaking) to bring about and support the desired changes among professionals; and

Figure 1. Conceptual Framework for Model Demonstration Implementation and Outcomes: Cohort 1



Source: *Implementation Research: A Synthesis of the Literature* (Fixsen et al., 2005).

(3) changes in relationships to consumers, stakeholders, and organizational partners in the system. These changes establish the conditions that are needed to support the ability and willingness of the destination organization to maintain the models' core intervention components.

Because the NIRN conceptual model focuses solely on the implementation, not the results of interventions, an element related to intervention outcomes needed to be added to reflect the full intention of the MDPs. The ultimate intention of the progress monitoring models was to improve instruction, resulting in improved outcomes at both the student and system levels. Student outcomes included increases in reading achievement, whereas systems outcomes focused on decreases in inappropriate referrals to special education of students whose difficulty in learning to read resulted from ineffective instruction, not a learning disability. For students who did receive special education services for a reading-related disability, systems outcomes also included increased use of progress monitoring data in writing and monitoring measurable IEP goals. Characteristics of the destination schools, classrooms, and teachers, as well as implementation experiences were hypothesized to relate to variations in the effectiveness with which implementation outcomes and both student- and system-level intervention outcomes were achieved. Finally, the conceptual model includes feedback loops, which are the learning paths

through which experience with model implementation informs iterations in core intervention and implementation components.

Data Sources

The data compiled and reported in this document are largely descriptive and qualitative and come from templates and profile tools, which were used by MDP teams to document the specific features and design elements of their models; record the “story” of the model development and implementation process; and describe the district, school, and classroom contexts within which they implemented their models. School and teacher surveys augmented the information gathered in the profile tools, as did information from the U.S. Department of Education’s Common Core of Data (CCD). The narrative section of the MDPs’ applications for OSEP funding described the components of the model and provided background information on the proposed sites. Conference call notes documented each MDP’s update report on regularly scheduled cross-MDP conference calls. Finally, each MDP developed and administered instruments to assess fidelity and social validity that were appropriate to its particular model.

Core Intervention Components of Progress Monitoring Models

Core intervention components refer to “the most essential and indispensable components of an intervention practice or program” (Fixsen et al., 2005, p. 24). It is important to identify these intervention components so that implementation effort is not spent on establishing aspects of a model that are not necessary to achieve the desired effects. Further, knowing which components are core and which are peripheral allows the MDP team to provide some flexibility to schools with regard to nonessential aspects of the model.

Core intervention components of the progress monitoring models were (1) the measurement model (e.g., what progress monitoring data were collected, how often, by whom, and with what supporting technology) and (2) procedures for using progress monitoring data to monitor student progress, modify instruction for students making insufficient progress, identify students who may be eligible for special education services because of a reading disability, and develop IEP goals and monitor progress toward them.

The C1 MDPs differed in several ways on these core intervention components, including the web-based technologies used, the reading skills assessed, the frequency of measurement, the “cut points” or benchmarks for determining various levels of reading achievement, and how measures were taken and data recorded. These variations were assessed and hypotheses generated as to how they may relate to variations in implementation and intervention outcomes using three key concepts from the body of research on the diffusion of innovations (Rogers, 2003):

- Relative advantage—“the degree to which an innovation is perceived as being better than the idea it supersedes” (p. 229)
- Compatibility—“the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters” (p. 240)
- Complexity—“the degree to which an innovation is perceived as relatively difficult to understand and use” (p. 257).

Research suggests that the relative advantage and compatibility of an innovation, as perceived by members of a social system, are positively related to its rate of adoption, whereas its perceived complexity is negatively related to its rate of adoption.

Applying these concepts to the MDP's models, we hypothesized that where compatibility was high, the burden or costs of adopting a model would be relatively low, and the perceived benefits also could be relatively low and yet still outweigh the costs in a calculation of relative advantage. Conversely, where there was considerable incompatibility, implementers would need to perceive a considerable advantage to the model to outweigh the demands of significant change in culture and practice.

MN and, to a somewhat lesser extent, PA-E had had considerable experience implementing components of the progress monitoring models (e.g., curriculum based assessments in MN and benchmarking assessments in PA-E), so the models were compatible with ongoing procedures in the districts. Thus, MDP teams working in MN and PA-E could be expected to have fewer implementation challenges than those working in OR and PA-W. The relative advantage of the measurement technologies used in each MDP also was a consideration. PA-E and PA-W used commercially available measurement systems, whereas OR and MN used "homegrown" web-based technologies, with MN's being proprietary to that district and OR's being publicly available at little or no cost. The latter was expected to be most likely to support model sustainability and spread.

Core Implementation Components of Progress Monitoring Models

Fixsen and colleagues (2005) identify four core implementation components that were common among successfully implemented practices or programs that are directly applicable to the progress monitoring model demonstration projects:

- Practitioner selection—the choice of the districts and schools in which the progress monitoring models are being implemented
- Training in core intervention components—formal training sessions provided both before and during model implementation
- Ongoing consultation and coaching—support for practitioners' learning the skills required by the model "on the job"
- Facilitative administrative support—leadership and support for model implementation within the schools and districts.

Fixsen and colleagues also suggest that how these components are carried out within the purveyors' organizations may be important—that is, the selection, training, ongoing consultation and coaching, and administrative support of the MDP staff who work in schools to help teachers implement the progress monitoring models may help us understand implementation experiences.

From descriptions of each MDP's strategies for their model's core implementation components, hypotheses were generated regarding how the variations documented across MDPs may relate to differences in their implementation experiences and outcomes. MN and OR MDP leaders had worked for many years with their respective partner districts and turned to these "old friends" as sites for their MDP work. These MDP teams could be expected to have fewer challenges in implementing their models than teams working in PA-E and PA-W, which were unfamiliar districts for the two Pennsylvania MDP teams. We also hypothesized that professional development and coaching strategies that more explicitly involved school staff in shaping and

delivering support in their own schools would be more effective in building the capacity to implement and sustain the models. Congruent with this hypothesis, MDPs' staffing strategies that shifted responsibility to school and district staff were expected to have greater implementation success than ones that were more MDP-centered. These two hypotheses suggested smoother and more successful implementation experiences in OR and PA-E, where explicit capacity-building strategies were carried out, than MN or PA-W, which relied more on university staff or MDP-funded site-based coordinators in key implementation roles. Finally, where district-level administrative support was clear early in a project and in concrete and visible ways, implementation was expected to proceed more quickly and be more sustainable than where such support was less evident. MN had a particularly strong showing on this factor.

Schools Implementing Progress Monitoring Models

Fixsen and colleagues (2005) contend that “core [implementation] components do not exist in a vacuum. They are contained within and supported by an organization that establishes facilitative administrative structures and processes to select, train, [and] coach” implementers of a new model or program (p. 58). Reflecting the importance of context in understanding model implementation, data from the MDPs and the CCD were used to characterize the schools in which the MDPs implemented their models. School factors hypothesized to relate to variations in achieving implementation and student and system outcomes included the following.

- **Student body characteristics.** The characteristics of the “clients” served by an intervention can condition the ability to implement the intervention and to achieve the outcomes it intends. In the context of implementation schools, the size of the student body may be one key factor in that a positive relationship has been shown between organizational size and willingness to adopt innovations (Rogers, 2003). However, there also is evidence that smaller schools may be more effective learning environments (Boss, 2000; Cotton, 1996; Cotton, 2001), which may be reflected in more positive student outcomes for models implemented in smaller schools. A large degree of diversity in a school’s population can create a dynamic learning environment, but also challenges to school staff in meeting diverse learning needs. Such challenges, as well as a “performance gap” created by a school’s poor academic standing could generate an impetus for change that would support adopting a new program. Conversely, a school with a pattern of poor academic performance may be a more difficult environment in which to generate student achievement gains.
- **Resources.** Having a range of resources in an organization, including stable leadership and staff with high levels of knowledge and expertise, is associated with a greater willingness to innovate (Rogers, 2003). Thus, the size of the teaching staff in a school relative to student enrollment and the sufficiency of other forms of staff support (e.g., reading specialists) may be important resources for implementing a model and for providing the quality instruction that could be expected to improve student outcomes.
- **School climate.** A positive climate at school involves having an orderly, well-managed school with engaged and well-behaved students—a fundamental foundation on which to build new instructional approaches and a basic condition for effective teaching and learning. Consistent with this premise, a positive school climate has been linked to higher student achievement (Bulach, Malone, & Castleman, 1995; Haynes, Emmons, & Ben-Avie, 1997).

- **Progress monitoring experience.** Schools whose staff had had experience with elements of the model in the past, such as doing benchmarking assessments or having grade-level teams and shared planning time in place, could perceive the MDP as entailing less change and uncertainty than schools without such experience and thus implement a model more readily or with greater fidelity.
- **Support for the MDP.** Having the leadership of an organization committed to the implementation of an innovation has been shown to be critical to its successful adoption and maintenance (Rogers, 2003; Rogers, Hunter, & Rogers, 1993). A principal who is highly supportive of a model, who communicates that support to staff, and who maintains the model as a priority over time can provide invaluable support to a model's acceptance in a school. Staff buy-in initially and over time, also has been shown to be a critical element in school change (Felner et al., 2001).

MDCC analyses generated 17 indicators of school-level implementation challenges suggested by the hypotheses above, expecting schools with fewer indicators to face fewer implementation challenges and to be more successful in improving outcomes. When these indicators were applied to detailed descriptions of each of the three implementation schools in MN, MN1 was shown to have fewer school-level implementation challenges (2) than either MN2 or MN3 (10 and 6 indicators, respectively). Of the 5 OR schools that completed their participation in that MDP, OR2 had only 1 school-level implementation challenge, whereas OR3 had 7; OR1 and OR4 each had 2, and OR5 and OR6 had 4 and 5. PA-E's 3 schools were fairly uniform, having from 4 to 6 school-level implementation challenges. In contrast, PA-W's 3 implementation schools were very different with regard to school-level challenges, with PA-W1 having 13, the most across all implementing schools, and PA-W2 and PA-W3 having 3 and 8, respectively. Thus, within each MDP, MN1, OR2, PA-E1, and PA-W2 were expected to reach full implementation of their models more readily and to make greater gains in improving student reading skills and in infusing progress monitoring data into IEP-related activities.

Teachers Implementing Progress Monitoring Models and Their Classrooms

As Fixsen and colleagues (2005) point out, “the core implementation components appear to be essential to changing the behavior of practitioners and other personnel [in this case teachers] who are key providers of evidence-based practices within an organization” (p. 58). The ability of those core components to change adult behavior may well be influenced by the characteristics of the adults involved in the model being implemented. These characteristics also may influence the extent to which a model achieves desired student and system outcomes. The primary classroom factors assessed by MDCC were:

- **Classroom composition** (e.g., class size, diversity, and grade level). The increased need for differentiated instruction posed by a larger or more diverse student population could make the intervention components of the model and the professional development and support it provides attractive to teachers. Classroom composition also could relate to student outcomes; research suggests that lower student-teacher ratios can help improve student outcomes because teachers may be better able to meet individual student needs (Achilles & Finn, 2000; Gersten & Dimino, 2006; Molnar et al., 1999).
- **Teacher education, certification, and experience.** There is no consensus regarding the importance of teachers' educational background and experience in terms of student

learning. Some researchers contend that “teachers have powerful effects on reading and mathematics achievement...” (Hanushek & Rivkin, 2006), whereas other studies find that practitioner education does not explain the variation in teacher effectiveness or student outcomes. Research also suggests that new teachers often perform significantly worse in the classroom because they usually “need to go through an adjustment period where they learn the craft of teaching along with adjusting to the other aspects of an initial job” (Rivkin, Hanushek, & Kain, 2005, p. 448). On the other hand, new teachers bring in new energy and may be more amenable to outside experts introducing new programs. Thus, it is unclear whether better-educated and/or more experienced teachers would be more likely to recognize the value of model practices and to implement them with a confidence that comes with experience, or whether less well-educated and experienced teachers would be more eager to adopt model practices in order to strengthen their instructional skill set.

- **Teacher professional development.** Teachers who routinely have professional development opportunities, particularly related to literacy, may have a stronger instructional foundation on which to build and, thus, achieve more reading growth with their students. The exposure to new ideas and the collegial interactions that may come with participation in an active professional development program also could positively predispose participants to the new approaches and interactions involved in the model demonstration project.
- **Core reading instruction.** Classroom research has long addressed best practices and instructional strategies that facilitate learning. Of particular relevance is the use of instructional groupings that support differentiated instruction in the context of tiered progress monitoring models (Carnine, Silbert, & Kame’enui, 1997; Deno, 2003; Elbaum, Vaughn, Hughes, & Moody, 1999; Fuchs, Fuchs, Mathes, & Simmons, 1997; Fuchs, 2004; O’Connor & Jenkins, 1995). MDP teams surveyed teachers regarding how often they used a range of instructional groupings and reading and language arts activities. Greater use of such practices was supported by the MDPs’ professional development activities and was expected to contribute to greater academic gains.

Teacher and Classroom Support for Students with Learning Problems

The presence of students with or at risk for learning difficulties in MDP classrooms was accompanied by a variety of supports research has shown to be of value for teachers, including opportunities to collaborate with colleagues, professional development on the varied needs of special education students, curricular modifications, and provision of instructional aides (Brownell, Smith, McNellis, & Miller, 1997; Gerber, Finn, Achilles, & Boyd-Zaharias, 2001; McLeskey & Waldron, 2002).

- The **forms and levels of support** a teacher received may have affected instruction in the classroom and the degree to which s/he was able to take on the teaching challenges and extra tasks required to implement the core components of a model with fidelity.
- **Classroom environment.** Qualitative data were used to indicate the degree to which the sample of classrooms for which data were available were described as having the features that earn a designation of positive, variable, or problematic. A positive designation was expected to denote an environment that was more conducive to

effective instruction and student learning, whereas the characteristics of a “problematic” environment were expected to impede both teaching and learning.

- **Progress monitoring experience, training, and buy-in.** Teachers who had previous experience with and training on elements of the model and regularly used progress monitoring to assess their students were expected to be more inclined to adapt their existing practices to the requirements of the MDP and to implement a model with greater fidelity. Further, greater teacher buy-in was expected to contribute to greater fidelity of implementation.

MDCC analyses related to these factors identified 16 indicators of classroom-related implementation challenges and assessed their prevalence at each implementation school. MN1 again had the fewest implementation challenges (3), compared with MN2 (6), and MN3 (9). OR2 and OR6 each had only 1 of the classroom implementation challenges, compared with 6 in OR4, 7 in OR1, and 10 in OR5. PA-E schools again were fairly uniform, having 5 in PA-E1 and PA-E3 and 7 challenges in PA-E2. PA-W schools also were fairly uniform but with more challenges—11 in PA-W1 and PA-W2 and 12 in PA-W3. As with school-level factors, we would expect that having more of these classroom-related factors would hinder or delay schools in achieving full implementation and student- and system-level outcomes.

External Influences on Schools Implementing Progress Monitoring Models

Some external factors and organizational contexts that may exert influence on the implementation process and model outcomes involve circumstances, decisions, policies, or resources of the MDPs’ implementing districts (e.g., competing or complementary district initiatives, specialized staff who can be allocated to support the MDP) and state education systems (e.g., the presence of a statewide technical assistance network to support scaling up). Other contextual factors (e.g., requirements of union contracts) are more peripheral, but they seemed to have influenced the education system in which the MDPs worked. Several hypotheses were generated regarding possible relationships between variations in context and in implementation experiences and outcomes.

- **District demographics.** Although the notion of an ideal size for schools or districts has long been debated, research shows that states with the largest districts and schools show poorer student achievement outcomes, and, as district size increases, student scores decrease. Furthermore, there appears to be a significant negative correlation between district size and student achievement for low-income and minority students. With 99 public schools and a student enrollment of more than 37,000 students, MN is within the top 5% of large school districts in the nation, educating twice as many students as OR, 3 times as many as PA-E, and 10 times as many students as PA-W, and, of the four school districts, MN has the most diverse student population. It would be reasonable to hypothesize that improving reading achievement would be a significant challenge for the MN MDP.
- **Union relationship.** OR and PA-W were reported to have very powerful teachers’ unions that were suspicious of the kinds of changes in teachers’ practices and activities that were entailed in the progress monitoring models. The PA-E and MN MDP teams also had local teachers’ unions, of course, but did not mention local unions to be a particular feature of their district contexts or a concern as they planned for

implementation. The difference in union strength across the districts could be expected to play out in differences in implementation experiences and outcomes.

- **School-related issues.** MN, along with OR and PA-E, reported declining school enrollment during the implementation years, and MN and OR reported current and pending school closures. As a result of having fewer students, the districts could face a smaller share of state and local revenue for school operations and the range of resources needed by all students, and by students with disabilities in particular. Furthermore, this had resulted in a reduction in faculty and staff reported by MN and PA-W, which could impede the MDPs' efforts by increasing class size, reducing availability of teacher aides and other staff to provide small group support, limiting opportunities for grade-level collaborative planning, and lowering morale.

MDPs in OR and PA-W reported ongoing tensions among school staff who voiced considerable philosophical differences regarding equitable resource allocation and school choice (OR) and the districts' efforts to adopt a common language arts curriculum (OR and PA-W), resulting in a lack of cooperation or cohesion among teachers. Both districts also were reported to have a high level of resistance to change among their teaching staff. Without buy-in by teachers and other school staff, it would be difficult to implement the models and sustain them.

- **Experience with and support for progress monitoring.** Model implementation may be impeded by the district's limited past experiences with and preparation for progress monitoring and RtI procedures; a tier 1 language arts curriculum was reported as "inconsistent" across the district for OR and "incoherent or absent" for PA-W. Furthermore, the PA-W MDP reported that this district lacked experience with the majority of essential progress monitoring components. It could follow that PA-W staff would have a greater struggle learning and implementing the model's core intervention components than teachers in the other districts.
- **State initiatives.** Both Oregon and Pennsylvania had established statewide RtI frameworks and initiatives so the MDPs and district staff in these states could be expected to benefit from state experience and support. The lack of a statewide RtI framework or a comprehensive RtI initiative in Minnesota might lead to an hypothesis that MN would not have the state support it needed to incorporate districtwide RtI, which might, in turn, hamper intervention implementation and outcomes. However, because both MN and their partner MDP staff have longstanding expertise and experience with progress monitoring, it is possible that the influence of a statewide initiative may be less pronounced than for districts initiating progress monitoring and RtI for the first time.
- **Academic standing.** Negative AYP results for the state or district have the potential to discourage new or ongoing initiatives that do not directly address academic performance specific to AYP improvement. However, it seems more likely that the AYP status might encourage states and districts to support the MDPs' focus on reading improvement, especially with students with disabilities or low-performing minority students because it may help improve their AYP status.
- **State education economics.** Funding shortages in a time of economic crisis could shape the experiences and outcomes of the MDPs. MN had considerably higher per student spending than the other districts and a lower unemployment rate. However, MN

also served a considerably more diverse and lower-income population, which may have placed greater demands on available resources.

Implementation Experiences in the 2006–07 School Year

The MN MDP team implemented its model in two schools (MN1 and MN2) in the 2006–07 school year, the Oregon MDP team implemented its model in four schools (OR1 through 4), and the two Pennsylvania teams implemented their model in one school in PA-E and one school in PA-W (PA-E2 and PA-W1). Analysis of the early experiences of the MDPs in these schools were organized around the first three stages of the NIRN conceptualization of the implementation process (Fixsen et al., 2005):

- **Exploration and adoption**—consideration of a program or practice and the decision to implement it.
- **Installation**—the activities that must occur for the destination organization to engage in implementation. In the progress monitoring MDP context, these were the initial professional development activities and the ongoing coaching of school staff involved with the models, through which they were enabled to conduct progress monitoring and to use data for instructional decisions and IEP goal development and monitoring. (See Chapter 3 for a discussion of these activities, as originally proposed by the MDPs.)
- **Initial implementation**—the early experiences of school staff putting the models into practice. Descriptions focus on taking progress monitoring measures; using data in instructional decisions; using data in special education eligibility determination and in setting and monitoring progress against IEP goals; and other uses of data, including sharing them with parents and students.

Variations in implementation experiences were noted at both the district and school levels in the 2006–07 school year, resulting in differences in the status of implementation at the end of the year. At the district level, administrators in MN, which was already experienced with progress monitoring, responded positively to what they observed in participating schools and came to the end of the school year committed to a more consistent application of model processes throughout the district. Implementation in OR occurred against a backdrop of conflict over the decision to impose a district-chosen core reading curriculum on schools that had a strong history of site-based control. Nonetheless, the district made progress in developing a model for districtwide RtI implementation that mirrored in major respects the MDP model. However, the fact that the school board had not voted to accept the model at the end of the school year hampered the MDPs ability to incorporate model procedures into special education eligibility determination decisions.

Like OR, PA-E was in the process of developing a districtwide RtI initiative in the 2006–07 school year. District staff recognized the value of having a demonstration school in the district to concretize the processes entailed in the model for other schools in the district and invested in training PA-E2 staff so they could become trainers of their peers in other schools when districtwide implementation would begin. Also like OR, PA-W was undergoing a significant shift in the foundations of its reading program, which played out in significant conflicts in PA-W1 during the school year. However, district staff remained strongly supportive of the model and worked to resolve or countermand school-level decisions that worked against its implementation.

These differences in district-level implementation status were the context within which school-level implementation occurred. All schools but one were implementing key components of the models to some level of fidelity at the end of the school year and were committed to continued participation in 2007–08. The exception was OR3, where significant incompatibilities between the principles embedded in the model and those that guided the whole language instructional approach of the school contributed to the school’s decision to withdraw from the project.

Implementation Experiences in the 2007–08 School Year

In an effort to strengthen the evidence for outcomes the MDPs could produce, MDCC staff suggested they delay implementation in at least one school until the 2007–08 year (referred to as “lag schools”), while conducting all student-level data collection for these schools in the 2006–07 year (pre-implementation year). The MDP teams working in MN, PA-E, and PA-W were able to follow this strategy, thereby having baseline measures of key outcomes against which to assess intervention effects in their two lag schools. The Oregon MDP team also added two new OR schools to their project in the 2007–08 school year. Documentation of the implementation experiences of these schools focused on the same three stages of implementation noted above, whereas the focus in schools that began implementation in the 2006–07 school year was on progress toward full implementation. Evidence of full implementation of new programs or practices in schools included (1) “the skillful use of an innovation” that is (2) “well-integrated into the repertoire of teachers,” and (3) “routinely supported by building and district administration” (Fixsen, Blase, Horner, & Sugai, 2009).

All schools newly implementing their models in 2007–08 accomplished exploration, adoption, and installation tasks and made significant implementation progress in their first year. For example, MN3 staff were said to be able to complete all measurement and evaluation activities on time in their first year. Also, newly implementing schools were reported to experience fewer implementation challenges relative to schools implementing for the first time in 2006–07. For example, PA-W MDP staff reported that model implementation had gone “much more smoothly” in the first year in their lag schools than it had in the first year in PA-W1. In OR, newly implementing schools were assessed by MDP staff at the end of 2007–08 to be “in about the same place in their first year of implementing the models as OR1, OR2, and OR4 had been the previous year,” even with the much shorter time to work with the model. MDP staff working in PA-E reported experiencing “much less resistance to the implementation of RtI and progress monitoring” in their lag schools than the prior year.

All schools that were in their second implementation year made significant progress toward full implementation or, in some cases, reached full implementation according to MDP staff. For example, by the end of the 2007–08 school year, MDP staff concluded that in MN1, “evaluation and measurement of student performance was implemented with fidelity. All... screenings were conducted by school staff on time and with quick turnaround of the data for monthly student team meetings [and] evaluation and measurement activities were implemented consistently.” OR MDP staff reported that “the scene has shifted dramatically” by the end of the second year of implementation in OR1, OR2, and OR4 compared with a difficult first implementation year there. PA-E MDP staff noted in the second implementation year that PA-E2 was “independent now; they took charge and are making data-based decisions” and that “good core instruction is in place.” The core data team in the school had taken on the leadership role in grade-level meetings,

and progress monitoring data were routinely being used in making instructional decisions. A high level of teacher turnover in PA-W1 from 2006–07 to 2007–08 detracted from the development of the skills of the teaching staff with regard to MDP procedures. Nonetheless, full responsibility for progress monitoring shifted to classroom teachers, and significant improvements in instruction were noted by MDP staff.

Implementation Experiences in the 2008–09 School Year

By the 2008–09 school year, the initial set of implementing schools had been working with the models for 2 years, and lag schools had had a single year of implementation experience. Despite very different contexts and models, all MDPs reported full implementation after 3 years of work in initially implementing schools and 2 years in “lag” schools. However, there was variation among schools and districts both within and across MDPs in the degree to which they met the criteria for full implementation related to all components of their model. For example, PA-E MDP staff reported that teachers in their implementing schools demonstrated a solid grasp of the measurement model and the data-driven team processes for making instructional decisions and carried out related activities independently. In contrast, applying the model procedures to eligibility determination for special education and to providing appropriate services to students with identified learning disabilities in reading remained a challenge for staff in those schools. Similarly, OR MDP staff reported that using progress monitoring data “appears to be part of the district culture,” at the same time expressing concern at a “lack of teacher knowledge related to effective practices for tiered instruction,” perhaps reflecting the focus in OR schools on developing “homegrown” interventions rather than using packaged curricula or programs. The OR MDP also reported continuing “struggles with finding time at the schools for teachers to meet to discuss their student data.”

In addition, there was variation across schools and districts in the roles assumed by MDP staff in their final implementation year. For example, MDP staff and resources continued to be an important part of project activities in implementing MN schools, where half-time project facilitators, fully funded through the progress monitoring grant, played a key role. MDP staff in that district also conducted fidelity checks on interventions and data-team processes for most of the year. They expected that it would be “challenging” to hand over the fidelity checks to school staff after project funding ended, a challenge apparently acknowledged by building principals. In contrast, MDP staff in PA-E played largely a consultative role during the year, having emphasized capacity building among district and school staff throughout the implementation period. A similar level of independence was reported regarding OR school and district staff.

Implementation Outcomes

MDCC analysis of the implementation outcomes achieved by the progress monitoring MDPs focused on the extent to which implementation schools had demonstrated (1) changes in the knowledge, attitudes, skills, and behaviors of practitioners and other key staff members within the implementing organization or system; (2) changes in both formal and informal organizational structures and cultures (e.g., values, policies, decisionmaking) to bring about and support the desired changes among professionals; and (3) changes in relationships to stakeholders (Fixsen et al., 2005). These changes would establish the conditions needed to support the sustainability of the models’ core intervention components in implementation schools and for the models to have the potential to spread to other schools in the district or

beyond. Variations at the district and school levels in the extent to which these implementation outcomes were achieved were considered in light of the hypotheses noted above.

In general, the implementation experiences and outcomes of the four progress monitoring MDPs do not consistently support or refute hypotheses about their potential relationships to variations in model characteristics, implementation strategies, school or classroom factors, or implementation context. For example, choosing districts with which MDP staff had well-established relationships, as occurred with MN and OR, was expected to ease implementation, which was born out in the case of MN. However, the incompatibility of the model with the district culture, policies, and practices may have trumped long-standing relationships in the case of OR, where MDP staff had the unique experience of a school dropping out of the project and noted a variety of other forms of “push back” from schools early on. The inverse side of this hypothesis also had conflicting support. Working in a new district was expected to present challenges to implementation, and challenges were experienced in droves in PA-W, but not in PA-E. Similarly, having few school- and classroom-related implementation challenges was associated with a smooth implementation experience in OR2, yet having 10 times as many such challenges did not correctly predict a tumultuous implementation experience in PA-W3.

The MDPs differed in many aspects of their professional development and ongoing coaching, including timing, intensity/duration, content, and form of and responsibility for delivery. Yet all MDP teams reported that staff in their implementation schools had acquired the knowledge, skills, and behaviors to operate independently on most or all of the core intervention components of their models. All MDP teams also reported confidence that model activities would be sustained in some form in implementation schools.

One theme emerging from this cohort’s set of implementation experiences is the generally easier implementation experience of lag schools. Although the request by MDCC that the MDPs delay implementation in one or more schools for a year was aimed at strengthening their outcome evaluations, MDPs reported that from an implementation perspective, it was “the best idea” MDCC had offered the cohort. Staggered implementation allowed the MDPs to work through the challenges of implementation in their first-year schools and identify training and support needs that could be filled from the start in their lag schools. Further, as first-year schools began to see student learning gains related to the model, they communicated their enthusiasm to colleagues in lag schools, creating a more receptive environment there than MDPs had found in their first-year schools.

Student- and System-Level Outcomes

Improvement in students’ reading skills was the primary student-level outcome assessed by MDCC. The dimension of reading ability that was measured in a uniform way by all MDP teams was oral reading fluency (ORF). Additionally, MDPs agreed to administer the short version of the reading comprehension subtest of the Stanford Achievement Test (Series 10) to second-grade students in one or more school years. MDP-specific measures also were used and data submitted to MDCC. For example, the *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)* were administered in PA-E and PA-W schools, MN’s own curriculum-based measures were administered in MN schools, and multiple years of student performance on the Pennsylvania System of School Assessment (PSSA) state accountability test were obtained for the PA-W schools. The primary system-level outcome was increased use of progress monitoring data in determining eligibility for special education services for reading disabilities and setting and

monitoring progress toward IEP goals, as measured by the IEP Checklist, an instrument developed for this purpose by a workgroup of MDP, OSEP, and MDCC staff. Variations across MDP districts and schools in the achievement of these outcomes were considered in the context of the hypotheses noted above.

As was true regarding implementation outcomes, the student- and system-level intervention outcomes of the four progress monitoring MDPs do not consistently support or refute hypotheses about their potential relationships to variations in school or classroom factors or district context. MN2 and PA-W1 certainly had the largest number of school- and classroom-related challenges to making sizable student achievement gains and did trail other schools on some measures, but not all. PA-E schools were fairly uniform in the number of challenges to student achievement gains they faced and had fairly uniformly implemented the progress monitoring and RtI models. Their levels of outcome achievement also were similar, as would be predicted. MN3 would have been predicted to experience greater trouble in achievement gains in student outcomes than MN1 but did not. However, there is some evidence in support of the hypothesis that being a lag school provides an advantage in that the MDP teams had learned from their experiences in their nonlag schools and provided stronger implementation support from the start in their lag schools. This hypothesis may partially account for MN3's strong showing as a lag school relative to MN1 as a nonlag school as well as the ability of PA-E's two lag schools to achieve student-level outcome gains in 2 years of implementation that equaled the gains achieved by the nonlag school in 3 years.

Lessons Derived from Model Demonstration Projects

Several lessons were gleaned from the 4-year experiences of the MDPs that relate to the core intervention components of the models themselves, the core implementation components of the strategies used by MDPs, the implementing organizations with which MDPs worked, and the contexts surrounding the organizations and MDPs. Although based on the experiences of the MDP teams and their districts and schools, the lessons below are couched in more general terms for a broader application to the model demonstration process as a whole.

Components of MDPs' Models

- **Provide tools and procedures for *using* data early, not just for collecting it.** MDP staff members need to develop tools and devote professional development resources to support the use of data, alongside training in measurement procedures and interventions.
- **Generate and share data that are important to implementers as soon as possible.** MDP teams must ensure that data are available to demonstrate change as early in the project as is feasible to garner support and enthusiasm for the models and enhance the model's social validity, which can be a powerful lever for generating full and sustained implementation.
- **The choice of technology tools can support or inhibit model sustainability and spread.** Heavy reliance on costly or proprietary technologies can be a limiting factor in expansion of a model beyond the original implementation sites.
- **“What are the core intervention components of this model?” should be an ongoing question for MDP staff.** MDP staff need to use their best judgment and experience and to collect data to help determine which model components are most important to maintain as designed, communicate that information clearly to

implementing organizations, provide tools to make maintaining the core components more likely, and help the organizations problem solve to obtain resources that support maintenance.

Components of MDP Implementation Strategies

- **A long history with an implementation site may be a mixed blessing.** Eliminating “getting to know you” challenges can be helpful in implementing a model, but the feasibility of implementation questions may best be addressed in new sites where less groundwork has been laid and where relationships of trust must be built from scratch.
- **Choose compatible partners.** MDPs need to vet carefully the destination organizations they recruit for the compatibility of their cultures with the theoretical foundations and core components of the models.
- **Pay attention to infrastructure support.** Another partner selection consideration is whether an MDP team can “nest” aspects of its work in a larger organization that will support a model’s sustainability and spread after the end of the project.
- **Concrete directions and usable tools give implementers confidence and competence.** Giving staff charged with implementing a model concrete tools (e.g., a template for a reading lesson plan) and saying, “here, try this” can help them over initial floundering in putting new information and strategies into practice.
- **Staff for sustainability.** Keeping an eye on sustainability means selecting a staffing strategy that does not place untenable demands on the implementing organizations to fill and maintain staff positions after an MDP leaves.
- **Capacity does not stay built.** An MDP should have a well-thought-out plan and timeline for developing the capacity within the implementing organization to continue needed training, facilitation, and support after the project ends.

Characteristics of Implementing Organizations

- **Leadership is critical.** The fact that turnover at the leadership level can seriously jeopardize a model’s future in an organization suggests that MDP teams should develop a deep bench of key leaders who understand and actively support the project.
- **Sustained leadership is needed to overcome the burden and risks to staff of the changes the models require of them.** Training for district and school leaders and clear expectations for their involvement can emphasize the critical role of sustained leadership in creating an implementation environment that supports success.
- **Creating systemic change requires a high sense of group efficacy.** Systemic change can be facilitated when leaders harness the power of a group working together with shared goals, a shared responsibility, and with shared accountability (Gibson, 1999; Pescosolido, 2003).
- **Competing initiatives are challenging.** Articulating to school leaders and staff how a coherent program of reforms could be envisioned that aligns the model with other initiatives to support an overall improvement strategy may help counterbalance a tendency for the focus to shift to consecutive waves of new initiatives.

Contextual Factors

- **Contextual influences often involve events outside the MDPs' control.** MDPs must exhibit a level of flexibility, creativity, and resourcefulness to respond effectively to influences on the implementation process that are part of the external context within which destination organizations work.

Learning Paths

- **Plan to collect and use multiple types of data to serve the formative purpose of a model demonstration.** The demands of being on-site and handling the many daily activities involved in model implementation can take precedence over examining and reflecting on the implications of these experiences for models. Intentionally making regular time for staff reflection can have multiple benefits for model development and implementation.
- **Fidelity data are more important to MDPs than to implementers.** Without an assurance that a model's core intervention components are being implemented with fidelity, there is no assurance that the expected benefits of the model will be realized. By including in their professional development activities an explanation of the critical purpose of fidelity checks and demonstrating their utility in helping shape concrete decisions that are salient to implementers, MDP staff might head off some of this reluctance to implement and sustain fidelity measurement.

These implementation lessons here illustrate what MDCC staff have gleaned, along with OSEP and MDP staffs, about the process of creating change in organizations to improve the outcomes of children and youth with disabilities through model demonstration. Fortunately, our opportunity to learn about factors that may influence the implementation and sustainability of promising models will continue. OSEP has funded MDCC for a second 5 years. In that time, we will work with cohorts 2 through 4 as they reach the end of their projects to further refine the perspectives we offer here and to develop new insights from their experiences. We also will be facilitating the collaboration of any new cohorts of MDPs that may be funded so they too have the opportunity to learn from each other and from MDCC's accumulated experience as they engage in both the promise and the challenges of implementing model demonstration projects.

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