School Psychology Review,
2006, Volume 35, No. 2, pp. 224–244

Sustainability: An Enduring Commitment to Success

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Abstract. Heartland Area Education Agency in Iowa illustrates how it has sustained a problem-solving service delivery system for 15 years and adapted to changing state and federal requirements while remaining consistent with its guiding principles that emphasize direct assessment, intervention, progress monitoring, and the evaluation of student results. The infrastructure supporting organizational transformation to a problem-solving system occurred on two levels, global and local. The reform effort is described in four phases. The system is evolving from individual problem solving in all cases to a more efficient system that integrates both group-level and individual interventions. Once the reform process is established, scaling up is refocused on the depth, or integrity, of implementation.

Compatible global and local infrastructures work together to facilitate systemic reform (Fullan, 2000). The two infrastructures are interdependent, yet each has different sets of actions according to their scope of responsibility. Global infrastructure provides the policy, legal, and financial framework whereas local infrastructure translates the global principles into a network of support for local agency personnel implementing innovative practices.

In Iowa, conditions that existed 15 years ago encouraged educators across the state to shift from a traditional special education service delivery system to a problem-solving paradigm. Iowa's reform effort involved participation of educators across the 15 area education agencies (AEAs) in developing Iowa's statewide problem-solving service delivery system. Each AEA's story is unique.

This article describes how one AEA, Heartland Area Education Agency (HAEA), adopted and sustained Iowa's statewide problem-solving service delivery system for the past 15 years despite shifting political, financial, and legislative influences. HAEA is the largest AEA in Iowa, accounting for approximately 25% of the state's student population and employing school psychologists and other professional disciplines to serve students across 54 public school districts and 32 accredited nonpublic schools. This article considers mechanisms used by HAEA in its reform effort. Like an autobiography, this retrospective story of organizational sustainability reflects on conditions and events thought to contribute to sustained change on multiple levels (Fullan, 2000).

Existing networks across the state and within AEAs (e.g., special education directors, school psychology supervisors, principals, superintendents) created a favorable climate supporting broad-based change (Slavin, 2004). Iowa's global infrastructure supported prob-

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lem solving statewide and HAEA's local infrastructure implemented problem-solving practices with students across schools and across time. Although the example is a state education agency (SEA) and an intermediate unit with its constituent districts, the concepts are equally applicable at a district (global) and school (local) level.

We describe Iowa's widespread replication of the problem-solving model, or scale up, using a four-phase framework (Taylor, Nelson, & Adelman, 1999), as depicted in Table 1: (a) creating readiness for change, (b) initial implementation, (c) institutionalization, and (d) ongoing evolution. In addition to replication or dispersal of a prototype (breadth of scale up), we also consider the depth and quality of implementation and adaptation (Coburn, 2003). Periodic use of dates provides a reference for activities. Phases are logically arranged, and content within phases may appear sequential and predictable. However, the sequence and content of actions differ across agencies. School reform is not linear (Fullan, 1996). Educational reform requires adaptable, resilient, and committed leaders at all levels of the organization to sustain success (Fullan, 2005).

To provide readers with a historical context for Iowa's statewide reform and its adoption and application in HAEA, we present website links to documents that demonstrate relevant concepts in Table 2.

Phase I: Creating Readiness

Readiness, both global and local, lays the foundation for change by developing a shared understanding of the need for, and purpose of, reform. Conveying the intended benefits of the reform effort and a description of supports to be provided during the change process is thought to contribute to readiness and acceptance (Fullan, 1991). Resistance to change is lowered when the readiness phase receives appropriate attention by promoting understanding and acceptance of reform (Johnson, Hays, Center, & Daley, 2004).

Create Global Readiness

The SEA is responsible for promoting quality educational services statewide. Global readiness (i.e., state-level action) sets the scene for subsequent local activities in Iowa AEAs.

Determine need for reform. Iowa's transformation began in the late 1980s. The impetus for innovation was spearheaded by Iowa's Department of Education in collaboration with the Iowa AEA Directors of Special Education. The catalyst for reform was widespread recognition by state and AEA leaders that special education identification practices and its service delivery system were not sufficiently effective in enhancing instruction for students with individual education plans.

In rethinking how service delivery and student outcomes could be improved in Iowa, educators, including leaders in the SEA, AEAs, and local districts, were informed by the emerging professional and federal policy literature. Although our current (i.e., 2006) literature base is far more extensive, the literature cited here illustrates documents that shaped reform at that time. *A Nation at Risk* (National Commission on Excellence in Education, 1983) challenged the current system and called for reform. Madeline Will, director of the federal Office of Special Education Programs, advocated for the Regular Education Initiative, which gave federal support for national reform (Will, 1986). The National Association of School Psychologists advanced visionary leadership by developing position papers (e.g., *Advocacy for Appropriate Educational Services for All Children,* National Association of School Psychologists, 1985; *Rights without Labels,* National Association of School Psychologists, 1986) and publications (e.g., *Alternative Educational Delivery Systems*, Graden, Zins, & Curtis, 1988) that provided evidenced-based practices that were viable alternatives to "traditional" service delivery at that time. The work of the Minnesota Institute for Research on Learning Disabilities (1977–1984) and professionals across the nation challenged traditional thinking and pro-

Table 1
Developmental Phases and Actions in Iowa's Educational Reform

Phases	Global: State	Local: Heartland AEA and LEAs
Phase I: Creating readiness	• Determine the need for reform • Identify systemic issues and guiding principles • Identify leadership and fiscal responsibility	• Determine actions and fiscal priorities • Employ collaborative leadership and action planning • Establish communication strategies
Phase II: Initial implementation	• Define problem-solving practices • Provide professional development • Establish policy alignment	• Use a model to guide practice • Create conceptual and procedural clarity
Phase III: Institutionalization	• Revise state rules • Align professional roles • Conduct project evaluation • Collaborate across agencies for interagency coordination	• Address internal alignment • Provide professional development
Phase IV: Ongoing evolution	• Provide statewide training and practice • Apply problem-solving practice to entitlement decision making • Integrate initiatives	• Sustain professional development focus • Continue to evolve • Reengineer problem solving within a school wide model

Note: Phases of replication of a promising initiative are based on Taylor et al. (1999). Conceptualization of global and local infrastructures is based on Fullan (2000).

posed viable alternatives for linking assessment to intervention with curriculum-based measurement (CBM; Deno & Mirkin, 1977; Shinn, 1989). Curriculum-based assessment (Lentz & Shapiro, 1986; Rosenfield, 1987), curriculum-based evaluation (Howell, Fox, & Moorehead, 1993), progress monitoring procedures (Fuchs & Fuchs, 1986), precision teaching (Lindsley, 1990), direct instruction (Carnine & Sibert, 1979), and behavioral consultation (Bergan & Kratochwill, 1990) showed positive benefits. The professional literature provided options. Federal and state representatives encouraged reform, and professional associations called for action. Iowans heard the call and responded, beginning with SEA leaders and AEA special education directors who collectively agreed to explore principles for statewide reform. In addition to a commitment to improvement, these leaders had credibility and legal responsibility for implementing the statewide special education service delivery system, which provided political support for asking difficult questions and pursuing alternative solutions (Carnine, 1999).

Identify systemic issues and guiding principles. Vision and clear statements of future benefit for the system and the people it serves are hypothesized as essential to reform (Senge, 1990). In 1988, Iowa's SEA commissioned a statewide committee to function as a design team to develop a framework for addressing identified needs. This team included university researchers, principals, special and general education teachers, school psychologists, parents, SEA staff, and AEA special education directors. HAEA was not a part of the original design team, but other AEAs represented intermediate units in this process.

Compelling reasons, serving as a catalyst for action, are thought to facilitate reform (Carnine, 1999). To that end, critical issues were identified in Iowa (Iowa Department of

Table 2
Website Listings Related to Iowa's and Heartland Area's Education Agency's (HAEA's) Educational Reform

HAEA's Website Listings

Scale-Up and Case Example
http://www.aea11.k12.ia.us/spr/SPRCaseExample.pdf
Final portion of the SPR article: scale-up reform and case example (14 pages)

RSDS Needs and Principles (1989)
http://www.aea11.k12.ia.us/spr/RSDSNeedsPrinciples.pdf
Identifies the needs and RSDS principles (2 pages)

Professional Practices In Problem Solving (1994)
http://www.aea11.k12.ia.us/spr/ProfPracticesInProbSolving.pdf
Provides innovation configurations for problems-solving practices (28 pages)

School Psychologists' Role and Functions (1991)
http://www.aea11.k12.ia.us/spr/SchPsyRoleandFunct.pdf
Description of school psychologists' role and function in Iowa (4 pages)

RSDS Focus Papers (1993)
http://www.aea11.k12.ia.us/spr/RSDSFocusPapers.pdf
Brief description of problem solving for parents and general education partners (20 pages)

Understanding the Components of the Problem-Solving Process (1993)
http://www.aea11.k12.ia.us/spr/UndrstndCompoftheProbsolvProcess.pdf
Description of the problem-solving process for professionals (38 pages)

HAEA Program Manual (2005)
http://www.aea11.k12.ia.us/spr/HAEAProgManual05.pdf
Heartland AEA's complete program manual for 2005 (382 pages)

HAEA Staff Development Plan (2000)
http://www.aea11.k12.ia.us/spr/HAEAStaffDevPlan.pdf
Describes the essential skills, knowledge and attitude expected of all staff (10 pages)

Improving Educational Results Through Data-Based Decision Making (2002)
http://www.aea11.k12.ia.us/spr/HAEADecisionGuide02.pdf
Describes the decision-making process in problem solving at HAEA (115 pages)

Working Together for Children: A Guide for Parents and Teachers (2002)
http://www.aea11.k12.ia.us/spr/WrkingTogthrForChildren.pdf
Description of the problem-solving process at HAEA (115 pages)

Entitlement for Special Education: Focus on Results (2003)
http://www.aea11.k12.ia.us/spr/EntitlemntForSpecEducation.pdf
Describes entitlement decisions for parents and teachers (7 pages)

Excerpts from Iowa's Special Education Rules (2000)
http://www.aea11.k12.ia.us/spr/Iowa_Rules_for_SPR.pdf
Identifies connection between rules and problem-solving and response to intervention practices in Iowa (3 pages)

(Table 2 continues)

Table 2 (*continued*)

Additional Website Documents From Iowa Department of Education

Iowa Administrative Rules of Special Education
http://www.state.ia.us/educate/ecese/cfcs/speced/doc/fulltext.pdf
Iowa rules governing special education and supporting the problem-solving process (75 pages)

Special Education Entitlement Standards
http://www.state.ia.us/educate/ecese/cfcs/speced/doc/sees.pdf
Iowa's standards for special education entitlement decision-making using response to intervention procedures (32 pages)

Note: HAEA website has documents used in conjunction with this article that can be accessed by using a single URL: http://www.aea11.k12.ia.us/spr

Education, 1989; see http://www.aea11.k12.iab.us/spr/RSDSNeedsPrinciples.pdf). Examples of substantive issues guiding the reform process were as follows: (a) separation of special education from general education in delivering services to students requiring special education; (b) heavy reliance on pull-out programs as the primary delivery method; (c) overemphasis on standardized assessment techniques used primarily to determine whether a given student is eligible for special education programs and services; and (d) evaluation of special education activities based on procedure rather than student outcomes.

To provide direction for innovation to address identified needs, guiding principles were established by a design team composed of a cross section of stakeholders (http://www.aea11.k12.ia.us/spr/RSDSNeedsPrinciples.pdf). Guiding principles were envisioned to be a generic proposition to give direction to reform without limiting or prescribing what actions would be used locally to implement reforms. Further, they were developed to be acceptable to most stakeholders and to represent a shared vision (Senge, 1990). Three principles related to the infrastructure for organization of resources: (a) develop local plan to implement reform, (b) provide professional development to increase skills and knowledge, and (c) assist students in transition between environments. In addition, four principles described the use of professionals' time when providing services and are the basis of a problem-solving system: (a) directly measure student performance to assess student functioning (Deno, 1985; Howell et al., 1993); (b) link assessment to behavioral and academic interventions to improve student performance (Shinn, Walker, & Stoner, 2002); (c) monitor student progress to determine the effects of the interventions (Fuchs & Fuchs, 1986); and (d) determine student benefit (Reschly, 1988b).

Collectively, this set of guiding principles created the framework for addressing system-level needs influencing educational services for Iowa children. Next, the focus shifted to establishing leadership and responsibility to put those principles into practice.

Identify leadership and fiscal responsibility to support global reform. Clear lines of administrative authority, responsibility, and decision-making expectations enable reform efforts to advance (Flynn & Langsford, 2003). System transformation requires a long-term approach rather than a quick-fix mentality (Fullan, 2002). To ensure a long-term commitment, a core committee of four SEA staff was formed that had the responsibility to advance the work of the statewide design team. The core committee used existing networks of groups with statewide leadership responsibilities (e.g., SEA administrators, special education directors, discipline supervisors) and formed new alliances with state agencies to promote actions and activities necessary to enable the AEAs to move from identified principles to practices. This initiative became

known as the Renewed Service Delivery System (RSDS).

Through the work of the core committee, a request for proposals (RFP) was developed by the SEA for the Iowa AEAs, to apply for funding to support innovations directly linked to RSDS guiding principles. Funding could be used to support the agency's infrastructure development, but not to hire additional personnel to do add-on tasks. Fiscal resources were to be used for transforming the work of existing staff and infusing relevant practices to achieve improved results that embraced the RSDS principles. RFPs were approved for one-third of the AEAs in the first year. In the subsequent 2 years, additional AEAs were included in the process until the effort was statewide. Over a 6-year period, from 1989 to 1995, $5 million was invested in the RSDS statewide process.

Create Local Readiness

The global SEA structure supported action at the local level by providing fiscal resources and approval of a plan for translating RSDS principles into actions. The AEAs' ownership began with the formulation of their plan and their local implementation strategy. Iowa's approach to change was not a prescription for adopting preconceived practices.

Determine actions and fiscal priorities. Priorities and a sequence for implementation of local activities were clearly articulated to promote transformation (Johnson et al., 2004). HAEA developed a plan that was approved and that received fiscal resources to support agency priorities. HAEA leaders established priorities and systematically assisted schools in four areas: problem solving, collaboration, progress monitoring, and building assistance teams. To ensure a common message was provided to all constituents, communication mechanisms were identified both for HAEA and local education agency (LEA) staff. RSDS newsletters were sent to LEAs and AEA staff over a 4-year period to disseminate information about progress with RSDS. In addition, conferences were sponsored by the HAEA to highlight effective implementation of innovative practices by LEAs. AEA administrators and supervisors collectively agreed upon common messages for staff. Further, professional development opportunities were aligned with the HAEA's priorities and RSDS principles, coordinated across schools, and made available to LEAs on a repeated basis. To maintain a clear focus, professional development topics inconsistent with RSDS principles were eliminated or deemphasized by the HAEA leadership and staff development trainers.

Employ collaborative leadership and action planning. HAEA and LEA staff participated in committee work to determine strategies for addressing priorities set forth in the agency's RSDS plan. Committee members were transdisciplinary (e.g., school psychologists, educational consultants, physical and occupational therapists, principals, teachers, curriculum coordinators) and chosen because of their expertise with the topics under consideration (e.g., assessment practices, intervention design, progress monitoring strategies, and evaluating outcomes). The approach of engaging staff in the planning process provided multiple perspectives on many issues and engendered a broad base of ownership for the practices evolving within the HAEA. Similarly, leadership was sought at all levels of the organization to assist with agency action planning and to avoid a top-down structure. Committees reviewed the professional literature on the areas identified by HAEA leaders (e.g., progress monitoring) and related methods (e.g., CBM) and proposed action for school-based implementation. It then became an empirical question as to whether the proposed practices were efficient and effective in achieving the desired results and, if not, what alterations were needed.

Establish communication strategies. To be able partners, stakeholders must be informed about reform purposes and practices. HAEA used multiple methods for communicating with schools and agency staff. AEA professional discipline meetings (e.g., for school psychologists, social workers, speech

language pathologists) provided a common message to staff about HAEA's priorities, strategies, expectations to assist schools, and skills for carrying out these tasks. At the district and school level, meetings with superintendents, curriculum coordinators, and special education leaders provided a consistent message about HAEA's priorities and alignment with district needs. As implemented, the process was highly collaborative and interactive to establish buy-in and enhance the breadth of ideas for practice. In addition, opportunities for staff to acquire essential skills for new and expanded tasks for applying the problem-solving model were provided.

Phase II: Initial Implementation

Schools are systems. In these systems, nearly everything is connected to everything else (Curtis & Stollar, 2002). Teaching is connected to curricula, schedules are connected to availability of limited resources (e.g., library, computers, music, physical education), and professional development is connected to what is possible (e.g., teacher release time, negotiated agreements with teachers unions), rather than what is needed to improve student learning. Changing one component in the system without attending to the entire system will not result in sufficient and sustained attention by a critical body of educators and, as a result, most strategies introduced will not be sustained over time. Attention to the entire system and its interrelationships provides the leverage to sustain infrastructure movement and development over time. Without systematic attention to the entire system structure, our experience has taught us that long-standing, meaningful change is unlikely to occur.

Sustaining innovation requires continued and focused effort and energy. The focus of this energy and attention is on the implementation of *something*. Most often in schools, that something is a specific strategy, practice, or approach (e.g., learning styles instruction, instruction to multiple intelligences, cooperative learning). Approaches to innovation containing a single strategy or practice hold allure for people working in schools. Nearly everyone feels overworked, with the huge number of requirements imposed on educators. The most that many people feel they can attempt is one small change in practice. Schools end up with the serial selection of initiative after initiative and strategy after strategy. Unfortunately, this approach does not work to improve student performance over long periods of time and, subsequently, decreases confidence in the likelihood of success and maintenance of reform initiatives.

An alternative to serial *strategy* selection is to focus innovation on a general model (such as the problem-solving model) within a continuous improvement framework for service delivery. A focus on a model helps everyone in the system understand how the pieces of the model, such as a problem-solving model, and the practices "are supposed" to fit together. It helps guide implementation by clearly specifying what is to be done at what point, and by whom. Continuous improvement practices maintain a focus on results through a recursive process of assessment, intervention, and reassessment to determine the status of performance at an individual or organizational level and adjust the intervention, if needed, to attain desired results (Simmons et al., 2002).

Initial Global Implementation

In Iowa, the model chosen was problem solving. For implementation to occur with integrity, professionals need to know what is expected and be supported in acquiring essential skills. The organization needs to review and align its policies to support new directions.

Define problem-solving practices. The available professional literature describing problem-solving practices (e.g., Shinn, 1989) informed Iowa educators as they developed the state's problem-solving model. During the developmental years with RSDS in Iowa, terminology and standards for guiding and evaluating problem-solving practices were further clarified.

To ensure uniformity in understanding professional application of problem solving, statewide standards were developed and ap-

proved by the Iowa AEA Special Education Directors Association (1994; http://www.aea11.k12.ia.us/spr/ProfPracticesInProbSolving.pdf). The standards were developed using innovation configurations (Hall & Hord, 2001), which establish descriptive statements of acceptable performance and variations that are unacceptable. These standards allow review of casework by AEA staff to determine adherence with professional standards and can be used effectively in professional skill development (see Appendix A in Reschly, Tilly, & Grimes, 1999). Descriptions of the components of the problem-solving process for professionals (e.g., parent involvement, problem statement, systematic data collection) were disseminated by the SEA and AEA in conjunction with professional development activities (Iowa Department of Education, 1993a, http://www.aea11.k12.ia.us/spr/UndrstndCompoftheProbsolvProcess.pdf).

To be active participants, all stakeholders needed to understand problem solving. To reach parents and general education teachers, *RSDS Focus Papers* that described the problem-solving process (e.g., "What Is the Problem-Solving Approach and How Do We Use It? " "How Do You Define a Problem?") were developed by Julie Schendel, a staff development specialist with the HAEA, under contract with the SEA (Iowa Department of Education, 1993b; http://www.aea11.k12.ia.us/spr/RSDSFocusPapers.pdf). The focus papers were disseminated to professionals through AEA administrators and discipline supervisors and used in conjunction with SEA and AEA professional development activities.

Provide professional development. The SEA used varied methods to translate principles into practices and support the systemic work of AEAs. The SEA formally endorsed the RSDS guiding principles, but did not formally endorse specific practices. For example, when an AEA considered how to address the RSDS principle of monitoring student progress, the AEA might use CBM as the application, but CBM was not the only acceptable way to monitor academic progress. Some reforms focus on sustaining programs (e.g., Success for ALL, Slavin, 2004) or specific practices (e.g., peer-assisted learning strategies; Baker, Gersten, Dimino, & Griffiths, 2004). In contrast, Iowa's approach was to sustain adherence to principles and allow research-based practices to inform judgments of which practice options were associated with positive results. This professional development strategy fosters ownership for practice at the local level and maintains a consistent focus on the guiding principles.

Because of the magnitude of the change, diverse strategies were used for providing resources statewide. The process provided information about relevant concepts and common language. The SEA coordinated the acquisition of books on topics such as methods of progress monitoring (Shinn, 1989) and alternative service delivery models (Graden et al., 1988), with reduced cost by buying in volume for AEAs and LEAs. In addition, the SEA developed and disseminated sets of video and audiotapes with contemporary leaders (e.g., Dan Reschly, Judy Schrag, Stan Deno, Howard Knoff, Gary Germann, and George Batsche), addressing topics related to RSDS principles. The programs focused on concepts and practices that were an extension of RSDS principles. For example, a program on implementation of CBM was linked to the RSDS principle of monitoring student progress with academic interventions. The SEA also sponsored hands-on statewide professional development activities with national leaders on how to develop, collect, compile, and interpret CBM district norms and make decisions about student progress.

Establish policy alignment. Establishing flexibility in the educational system is considered essential for effective reform (Taylor et al., 1999). In 1990, AEA and LEA leaders perceived Iowa's special education rules as restricting service delivery and innovation. Although the Individuals with Disabilities Education Improvement Act of 2004 has considerable latitude, Iowa's state regulations and interpretation of federal requirements often limited flexibility. Consequently, the SEA permitted requests for modifications in state

regulations through a rule replacement procedure in AEA responses to the state-issued RFP. A rule replacement ensured that state rules were appropriately in place, but allowed responsible flexibility in implementation. Adjustments to allow for flexibility were proposed by AEAs through the rule replacement process and approved or disapproved by the SEA, providing another opportunity of shared responsibility and shared ownership.

By way of illustration, three examples of rule replacements requested by many AEAs were as follows: (a) the use of a noncategorical designation for students requiring individual education plans; (b) providing flexibility in comprehensive assessment procedures, allowing ecologically based direct measures of students' learning or behavior to replace less-direct, higher-inference assessment procedures such as intelligence and personality tests; and (c) flexibility in how students were grouped for instruction (i.e., by need, rather than disability categories).

Initial Local Implementation

Focusing on a model is thought to facilitate conceptual clarity for the implementers (Fullan, Bertaini, & Quinn, 2004). It provides the context for explaining why particular activities are occurring and where they fit into the "bigger picture" (e.g., professional development in a specific skill area). This framework assists leaders in answering the questions "Where are we at in implementing our model?" and "Where are we going next in implementation?" Moreover, during change, lack of clarity in direction often creates significant stress for individuals whose practice is changing (Fullan, 1991). Therefore, knowing the next steps in implementation may offset the stress often associated with change.

With the AEA plan written and funding to support capacity-building activities secured, participating AEAs were prepared to adjust policies to implement new ideas. The SEA and AEAs operationally defined problem solving to ensure adherence with professional practices and provided skill training for staff to begin piloting the problem-solving process.

Use a model to guide practice. HAEA's problem-solving model was designed initially to allow improved special education practice in HAEA's nearly 100 public and nonpublic school districts. The model specifically intended to help schools (a) allocate resources, (b) use the scientific method for decision making, and (c) apply scientifically based interventions. Each of these concepts is described here.

HAEA's problem-solving model provided a more rational and efficient way to allocate resources (e.g., time) to solving problems in schools than had been applied in the traditional model. HAEA's system was predicated on the idea that the best way to solve problems was to prevent them. Moreover, early intervention was considered more time efficient than waiting for problems to become so large that remediation would require huge amounts of instructional resources. At the start of implementation in 1990, there were two very separate systems of education in HAEA schools: general and special education. These systems were disconnected in both curriculum and instruction. The system was reactive in that it waited for problems to occur and to attain a certain degree of seriousness before intervening. HAEA's problem-solving model intended to bridge the gap between general and special education systems. The intent was to intervene early, when problems were relatively small and easier to remediate. In addition, focus was placed on resolving many of these problems in the general curriculum by systematically using existing educational resources.

Prevailing educational practice in HAEA before 1990 was to match educational treatments to underlying student characteristics (e.g., disability category). The logic underlying this decision-making system is called the aptitude by treatment interaction model (Cronbach, 1975). Although this type of matching was prevailing practice nationally, it was not effective in raising student achievement for many students (Reschly & Ysseldyke, 2002). HAEA's problem-solving system adopted an alternate logic for decision making rooted in the scientific method (Tilly, 2002). Stated plainly, the prob-

lem-solving model requires practitioners to use data to answer four interrelated questions (i.e., What is the problem? Why is it occurring? What are we going to do about it? Did the interventions work?).

HAEA's problem-solving model promoted the use of research-based instructional and intervention practices to the extent available. Before 1990, when the HAEA problem-solving model was first implemented, there were not many widespread, empirically validated instructional strategies available (Boardman, Arguelles, Vaughn, Hughes, & Klinger, 2005). As a result, many of the strategies used in HAEA schools at the time did not have a research basis. HAEA engaged with many primary researchers to create a practice–research network (Kratochwill & Shernoff, 2004). This partnership facilitated research-based practice in HAEA schools and informed researchers about contextual variables that can affect implementation in field settings.

Figure 1 illustrates important characteristics of the model. First, the intensity of problems (*A*) in schools ranges from very low at the left-hand side of the graphic to extremely intense on the right of the graphic. In the same way, the number of resources necessary to address problems of different magnitudes (*B*) varies systematically from very low at the bottom of the graphic to very high at the top of it. Within the graphic, there are four interconnected circles (*C*). Each circle represents one iteration of the four-question problem-solving cycle. The four different circles on the graphic represent the ideal and intended matching of amount of resources to the nature and severity of each problem. That is, problems that are of

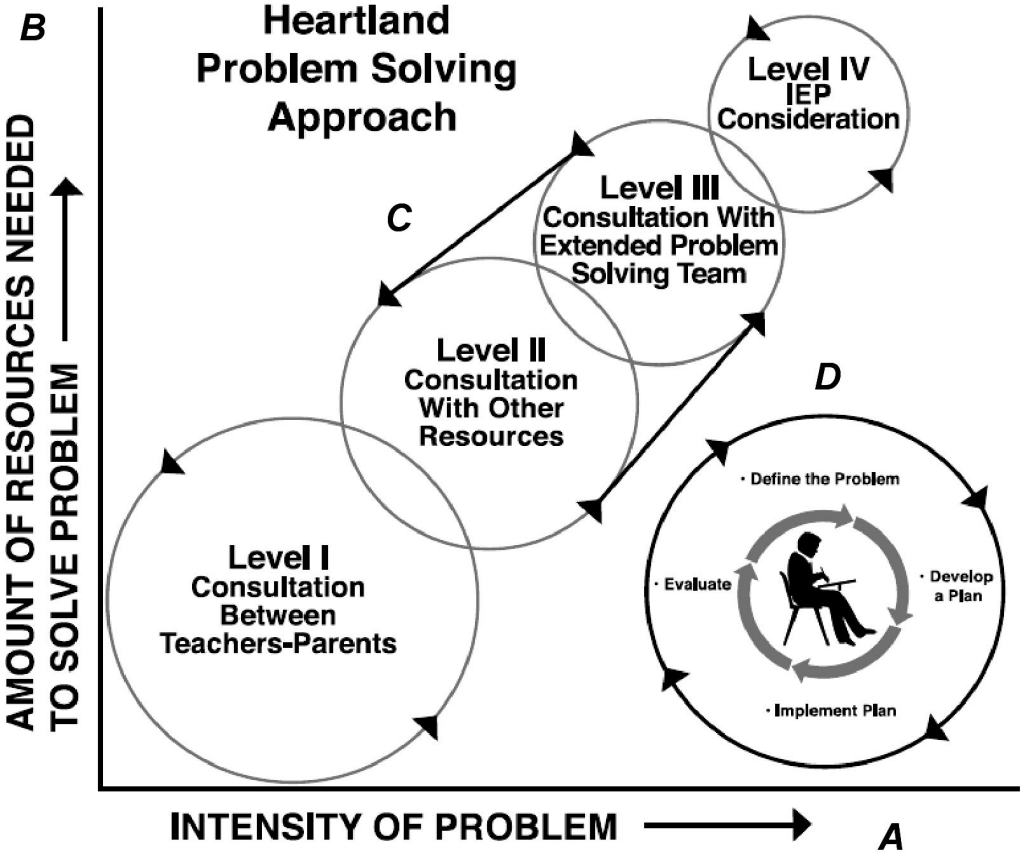

Figure 1. Heartland problem-solving approach.

low intensity will require a lower level of resources to resolve than problems with higher intensities. The same problem-solving process occurs at every level of the system (*D*). What differs at each of the four problem-solving levels is how in-depth are the procedures used to address problems within the four-question problem-solving logic (for details, see Ikeda et al., 2002).

In Level I of HAEA's problem-solving model, student concerns can sometimes be addressed successfully by the parent and teacher working together with no additional resources. In Level II, additional building-level resources are needed to address student concerns. In Level III, if the problem requires more specialized input, other school and/or support staff members are added to the group of persons working to solve the problem. Documentation and data collected at this level become very specific. In Level IV, it may become clear that additional resources are needed to address the student concern. Special education may be considered at this level.

Establish conceptual and procedural clarity. HAEA provided extensive professional development and support for the implementation of the problem-solving model during supervision. During initial implementation of a new model, practitioners and supervisors will occasionally become confused about what they are doing and how they are doing it. Having a conceptual model as a roadmap to guide practice provides a clear strategy for diminishing confusion and providing procedural clarity. The practitioner or supervisor can ask, "Where are we in implementing the model?" The answer helps clarify the next steps.

Phase III: Institutionalization of a Problem-Solving System

Institutionalization refers to the effective integration of innovation into an existing organization (Johnson et al., 2004). This means continued expansion of implementation and refinement of procedures to meet stakeholders' and organizations' needs. Quality, or depth implementation, should be considered when scaling up (Coburn, 2003). Standards and clarified personnel expectations may be important to this end (Taylor et al., 1999). Four areas targeted for action in Iowa were reformulating rules, redefining professional roles, evaluating results, and working through collateral effects on other systems affected by RSDS changes.

Global Institutionalization of Established Practices in a Problem-Solving System

Revise state rules. To achieve institutionalization, policy alignment is posited to be critical following favorable results from the initial implementation phase (Johnson et al., 2004). Across Iowa, pilot projects implemented problem-solving practices that were intentional variations from the established system. Some practices produced benefits for students with individual education plans and warranted continuation (e.g., noncategorical special education designation, early intervention for students in general education, and elimination of previously required assessments, such as routine intelligence testing), whereas other practices were discontinued on the basis of less supportive evidence of benefit analysis (e.g., prohibiting service by special education personnel without formal determination of eligibility for placement). Policy revision followed broad-based implementation of innovation in Iowa's reform, which led to heightened acceptability of progress rule changes (Grimes & Tilly, 1996). The RSDS process spanned 6 years from the development of the guiding principles and initial RFPs to the rewrite of state rules that institutionalized the option of a problem-solving service delivery system. In 1995, on the basis of statewide experience and results in implementing RSDS, state rules governing special education were revised to incorporate innovative practices determined by the SEA to be successful in the implementation phase across multiple AEAs. Three examples of new rules established in 1995 included the following: (a) the inclusion of the definition of systematic problem solving in state rules regarding early intervention services and determining students' eligibility for

IEP services, (b) requirement of goal-directed general education interventions as a means of determining students' responsiveness to interventions, and (c) identification of students with disabilities using the noncategorical classification, "entitled individual," rather than categorical disability labels (e.g., specific learning disability). These revised state rules reshaped the assessment and intervention processes to support students receiving general and special education services. For example, goal-directed general education interventions, with progress monitoring, were required prior to a full and individual evaluation (see http://www.aea11.k12.ia.us/spr/Iowa_Rules_for_SPR.pdf).

Align professional roles. As RSDS practices were being implemented statewide, there was a growing discrepancy between current functioning of school psychologists and the established job descriptions and role statements in AEAs. Prevailing expectations did not include functional assessments, general education interventions, systematic formative evaluation, or support for the collection of student outcome data. Job descriptions focused on scope of professional services, such as testing. Therefore, reconceptualization of the role and function of school psychologists was needed to reflect changes in the service delivery system and psychologists' expanding skill set resulting from statewide and AEA professional development activities (Deno, 1986; Reschly, 1988a). To this end, representatives of all university programs for school psychology in Iowa, all AEA supervisors of school psychology, the Iowa School Psychologists Association, and the SEA collaboratively developed a role and function paper through a group consensus process (Iowa Department of Education, 1992). This article defined expectations for professionals related to problem-solving practices: assessment, intervention design, performance monitoring, research, and collaboration (http://www.aea11.k12.ia.us/spr/SchPsyRoleandFunct.pdf). HAEA redesigned its job descriptions and expectations for school psychologists to reflect these concepts (Allison, 2002). This further institutionalized the expectation and reinforced professional practices at the AEA level. The HAEA supervisor reviewed school psychologists' casework and determined adherence with expectations in job description and standards for problem-solving practices regarding consultation, functional assessment, and intervention design (Allison, 2002).

Conduct project evaluation. An external appraisal system assessed the statewide change process. Before changing the state rules, the SEA supported RSDS project evaluation. Under Dan Reschly's leadership, then at Iowa State University, ongoing evaluation enhanced the knowledge base surrounding RSDS and provided recommendations for future directions. Building assistance teams providing early intervention decreased teachers' perceptions of student needs and reduced the probability of special education referrals (Tilly, Clark, Atkinson, & Flugum, 1992). The longer educators were involved with RSDS, the greater their support for the problem-solving practices and RSDS concepts (Tilly, Reschly, Flugum, Atkinson, & Sullivan, 1992). Reschly and Flugum (1992) determined that the movement to revise state special education rules was generally supported and identified specific areas for further development within RSDS. Areas targeted for further development included strengthening of the quality of interventions provided through consultation and building assistance teams and AEA support personnel to focus on prevention and early intervention with learning and behavior problems and documentation of student outcomes. In addition, an economic impact study determined the anticipated effects of changing state special education rules and concluded the changes posed potential for broad-based support for students with the liability of cost and time necessary for acquiring the skills to understand, implement, and sustain a new service delivery model (Cahill, Quinn, & Chandler, 1995). Collectively, these research activities surrounding evaluation of Iowa's reform efforts informed SEA, AEA, and LEA policy makers of the quality of implementation and results of the RSDS principles, as they became

translated into applied practices and helped shape future professional development activities (Reschly, Robinson, & Ward, 1990).

More recently, research in Iowa has examined applications of the problem-solving model to specific targets. For example, a school-wide reading initiative conducted across 36 sites over a 3-year period showed favorable effect sizes in improved reading achievement and reduction in special education referrals in kindergarten through Grades 1 and 2 (Tilly, 2003).

Collaborate across agencies for interagency coordination. Issues regarding interpretation of governmental regulation, legal guidance, and professional practice were addressed in forthright dialogue. Potential concerns related to professional and systemic practices were identified by key stakeholders (i.e., Iowa Protection and Advocacy group, professional associations, and individuals in Iowa). A panel of experts representing three perspectives—government, legal, and professional practices (Judy Schrag, Reed Martin, and David Prasse)—were assembled to address issues and to arrive at a consensus in response to issues generated by various constituencies (Prasse & Schrag, 1999). Their responses indicate that problem-solving practices as proposed in Iowa are compatible with the Individuals with Disabilities Education Improvement Act of 2004, are consistent with professional standards while offering parameters for responsible implementation, and were disseminated widely in Iowa (Prasse & Schrag, 1999).

As professional practices in education were modified, adjustments were necessary to assist students with disabilities to access services provided by other systems (e.g., Vocational Rehabilitation, Department of Human Services, and Juvenile Justice Services). For example, effective transition from school to adult services is an important consideration in special education and is one of the RSDS principles. The eligibility determination process used by Iowa Vocational Rehabilitation Services at the time typically included intellectual assessment, which was no longer conducted routinely by HAEA. To address this potential barrier to service delivery, discussion led to agreements regarding a process to support Vocational Rehabilitation Services information needs that did not require routine administrations of intelligence tests and did not compromise professional practices or services for young adults. As illustrated in the example, interagency discussions established acceptable alternative procedures to meet the needs of all agencies and represent systemic resolutions that further contributed to the institutionalization of problem-solving practices in Iowa.

Local Institutionalization of Established Practices in a Problem-Solving System

Alignment of the agency infrastructures will either contribute to, or detract from, the capacity of the agency to sustain a coherent set of services across time (Johnson et al., 2004).

Address internal alignment. When the RSDS principles were adopted, the task shifted to translating principles into practices. At HAEA, careful attention was given to the internal alignment of program activities to ensure consistency in service delivery and to support staff development and skill application. Agency policies established a broad framework for staff conduct and services. A written program manual clarified expectations of how agency services were to be provided to children, families, and schools, which begins to bridge policy to practice.

Supervisors played a vital role in aligning resources, personnel, and agency activities to support delivery of problem-solving services (Allison, 2002). Discipline supervisors and practitioners designed and implemented agency supports (e.g., hiring practices, job descriptions, evaluation practices) to assist staff in effectively incorporating these expectations into routine professional practices. Hiring was based on job descriptions that included the expectation of learning and using problem-solving practices to support students. Professional development activities corresponded to the content in the program manual, including assessment and intervention principles fundamental to a problem-solving process (Flugum

& Reschly, 1994; Upah & Tilly, 2002). Subsequently, personnel evaluations and staff support were aligned with the agency's expectations for a problem-solving system. Professional evaluation and staff improvement was based on comparing work samples to performance expectations.

Provide professional development. HAEA established a training cadre with staff who had the primary responsibility to support AEA and LEA staff in acquiring essential skills, knowledge, and attitudes required to successfully apply practices with integrity and adhere to the logic of a problem-solving process. HAEA systemically infused evidence-based practices into its professional development system and incorporated ongoing training on evidenced-based practices into its annual offering for LEA and HAEA staff. Over time, a consistent skill set was established that supported RSDS principles (i.e., directly assessing student performance, linking assessment to intervention, monitoring student progress, and evaluating student benefit). Moreover, follow-up support was provided for schools and AEA staff in receiving training and ongoing implementation as part of general practice.

Phase IV: Ongoing Evolution

Reform that lasts requires continued attention to ensure that new and existing agency initiatives use professionals' problem-solving skill sets, that practices are applied to the decision-making process in general and special education, and that the process continues to be informed by implementation data.

Ongoing Global Evolution

By 1995, the guiding principles had become codified in state rules governing special education and embedded in AEA program manuals guiding service delivery. The term *RSDS* became unnecessary, because the work transformed from a "renewed" service delivery system to an established framework for service delivery. Attention shifted to continued refinement of the system and application of the existing competencies developed through problem-solving training into emerging educational initiatives. Collaboration between the SEA and AEAs has been fundamental to Iowa's capacity for ongoing evolution and sustainability.

Provide statewide training and practice. Problem-solving principles continue to be incorporated as the state education system is revised. Given its value for informing instruction, monitoring student performance on IEP goals, and communicating formative and summative results to parents, graphing of student performance has been added to the recently revised state IEP process. The SEA is also extending application of problem-solving logic and practices to decisions regarding discontinued need for special education services (Powell-Smith & Ball, 2002). To ensure these changes were incorporated into practice, AEAs provided professional development on these new professional activities to AEA and LEA staff. Iowa's ongoing commitment to professional development helps institutionalize extensions of problem-solving logic in everyday practices.

Apply problem-solving practices to entitlement decision making. Iowa developed procedures for systematically implementing response to intervention practices to determine eligibility for special education services (http://www.state.ia.us/educate/ecese/cfcs/speced/doc/sees.pdf) in alignment with national policy makers (National Association of State Directors of Special Education, 2005). These procedures were developed through a statewide collaborative effort of SEA leadership and representatives of AEAs who reached consensus on responsible eligibility decision making. This collaboration provided a unified and coordinated approach that is supported by state education rules, State Part B Plan, and communication across AEAs, facilitating consumers' understanding of entitlement decision-making practices.

Generalize skills. The SEA continues to administer initiatives that apply practices associated with problem-solving principles.

These state initiatives include (a) an instructional decision-making model designed to support differentiated academic instruction and alignment of school-wide resources within a multitiered service model (University of Texas Center for Reading and Language Arts, 2002), (b) a positive behavior support network to support school-wide interventions (Iowa Department of Education, 2004a), and (c) a learning support network that links community and school resources to assist schools in improving students' behavior (Adelman & Taylor, 1998; Iowa Department of Education, 2004b). Consequently, there are multiple opportunities for professionals to apply and adapt the knowledge, skills and attitudes associated with the problem-solving process in new initiatives in Iowa.

Ongoing Local Evolution

To enhance HAEA's service delivery system, the problem-solving sequence was applied at the organizational level, with evaluation of these activities forming a feedback loop for a continuous improvement cycle (see Allison, 2002, for detailed examples). Data were reviewed and subsequent program improvement developed, which modified future versions of the program manual, professional development activities, personnel evaluation emphasis, and program evaluation design for future years. Currently, HAEA continues to expand its problem-solving practices and to use data-based decision making to enhance student outcomes through a school-wide model of services.

Sustain professional development focus. Sustained focus on the model and use of continuous improvement frameworks were crucial to HAEA's long-term success. Focus on a model guides the sequencing, development, and implementation of professional development within a school. Employment of a continuous improvement framework is an involved process with many components that must be implemented with fidelity. In practice, all of these components cannot be learned to mastery and implemented simultaneously. Professional development must occur plan-fully and sequentially, one component at a time, until a whole is created whose sum is greater than its parts.

Continue to evolve. A model focus has an important and desirable benefit in that it will likely not become obsolete. Although the *components* of the model are constant, in that they specify what needs to be done in what order (e.g., problem identification, problem analysis, formative assessment), the *practices* associated with these components are *not* constant. Practices evolve as improved technologies become available over time. For example, in the very early days of implementing HAEA's problem-solving model, teachers monitored reading growth over time using teacher perception and student accuracy on reading flash cards. These practices accomplished the purpose of formative assessment. As time went on, however, improved practices such as CBM became available for monitoring reading progress and widely replaced more informal measures in HAEA. The principles underlying the purpose of progress monitoring and formative evaluation has not shifted over time, but the technology for doing so has changed. Model focus allows HAEA to adopt promising practices as they become available and fit within the problem-solving model without significant disruption to business as usual in Iowa's schools.

Reengineer the problem-solving model to address school-wide issues. When HAEA's problem-solving approach was initially implemented, school-wide models for integrating special and general education were not available. The impetus for changing practices for struggling students came primarily out of special education. As a result, the problem-solving model was predicated on an $N = 1$ approach. That is, it was designed to work with one student at a time, from initial problem identification all the way through problem resolution, no matter where in the model that led. There were some significant limitations that resulted from engineering the problem-solving system this way. First, solving problems one at a time is not particularly

efficient from a resource utilization standpoint. Second, with a child-by-child focus, there was no way to deal proactively with the entire curriculum and instructional programs that were creating the educational problems seen by the problem-solving system. Third, individual teachers cannot implement more than one or two simultaneous interventions with integrity at any given time, limiting the utility of the $N = 1$ approach when two or more children in the same classroom were experiencing difficulties. Fourth, because the problem-solving model was still "reactive" to teacher-referred problems, many teachers perceived problem solving as the new "way to get kids into special education," which is not its purpose.

Noted limitations of the $N = 1$ approach, coupled with developments in the literature, led HEAE to consider the possibility of reengineering the problem-solving model to address school-wide issues. Further, with the passage of the No Child Left Behind Act of 2002, accountability requirements for the entire educational system heightened awareness that school districts are accountable for the learning and proficient development of basic skills of all of their students. These accountability contingencies allowed and promoted the reengineering of HAEA's problem-solving model, yet the science and principles underlying HAEA's original model remained valid and were maintained throughout this process.

Although the basic principles of the model have not shifted, the focus has changed from an emphasis on applying the model only to children who are struggling, to focusing on *all* children, from a proactive and preventative stance. With this shift, a series of fundamental changes have been made in the engineering of the problem-solving system. First, to allow the problem-solving model to work for *all* students in a system, not only those who struggle and are referred by their teachers, HEAE supported LEAs that conducted universal screenings in basic skills areas with all students in a school or district. These screenings objectively identified students potentially in need of educational interventions beyond the general education curriculum alone. Second, the school-wide focus included examination of core curriculum based on student performance data. When a sufficient percentage of students were not becoming proficient based on the core curriculum alone, these data suggested the school or district should analyze its curriculum and instruction to determine what components may be modified to improve overall student performance. This proactive examination of the school curriculum was not part of the original Heartland problem-solving model as performance data were not routinely collected on all students with an $N = 1$ focus. In addition to universal screening and curriculum reviews, the school-wide focus presented opportunities for implementing data-based interventions at a group level, as opposed to implementing only individual-level interventions. Once students are grouped based on their performance strengths and deficits, teachers can come together and design group-level supportive instruction to meet students' needs. Although this was always allowable under the original problem-solving approach, the system structures were not engineered to efficiently provide group-level data.

In recent years, HAEA's problem-solving model has evolved toward a three-tiered model (Sugai, Horner, & Gresham, 2002; University of Texas Center for Reading and Language Arts, 2002). The descriptions of the underlying logic and rationale for a three-tiered model are consistent with the HAEA approach of matching resource intensity and problem intensity described earlier (Figure 1). What is different is that *all* students are encompassed in this new model, not just students with learning or behavioral problems. Moreover, problems in the new school-wide model are not identified solely by teacher or parent referral of struggling students, but, instead, student problems are defined directly by performance on critical indicators of basic skills. A graphic depiction of the relationship between HAEA's problem-solving model and three-tier models is presented in Figure 2. Consistently across service delivery models, students with intensive instructional needs receive individualized diagnostic evaluations of

their skill strengths and weaknesses and individualized, intensive interventions are provided to these students.

Individual application of response to intervention will continue to be implemented in the HAEA for low-incidence behaviors. For example, fine motor, gross motor, hearing, vision, and articulation concerns occur on a less frequent basis and often require individual analysis and treatment.

A case example of HAEA's ongoing evolution is available at http://www.aea11.k12.ia.us/spr/SPRCaseExample.pdf; see "Scaling-up and Case Example." This example focuses on assessment and report writing using response to intervention concepts and illustrates how HAEA has continued to evolve, has used data for organizational decision making, and has supported HAEA staff in acquiring refined skills as the system continues to evolve.

Lessons Learned

Iowa established a framework of complementary global and local infrastructures to create conditions, incentives, and ecological supports that permitted a broad-based reform initiative to be sustained. Existing networks within the state for decision making and communication were used to promote an understanding of new principles and provide professional development opportunities to aid in translating these principles into practice. Many adjustments have been made since problem solving was initially implemented in Iowa and at HAEA in 1990. The process was described as moving through phases of readiness, initial implementation, institutionalization, and ongoing evolution. Now, 15 years later, continuous improvement is no less of an effort. The practices within a problem-solving

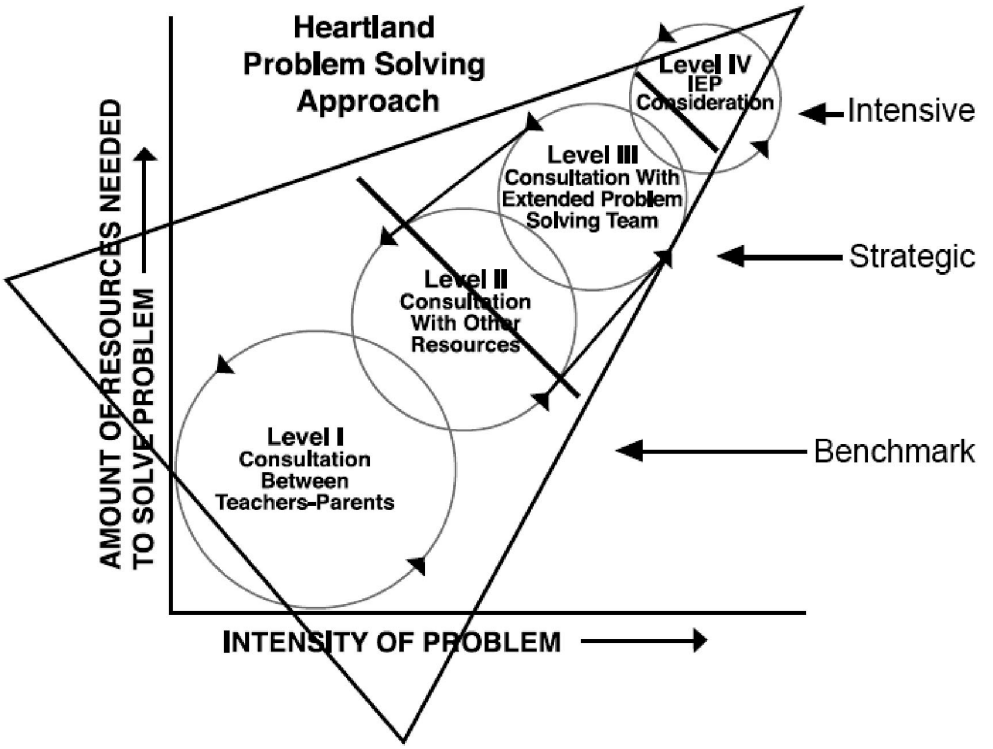

Figure 2. Evolution of the Heartland problem-solving model to a three-tier model of service delivery.

system have evolved by going to scale with a concerted focus on the depth, or quality, of implementation and generalization of professional skills (Coburn, 2003).

The overall system has evolved as well. HAEA could not continue to implement problem-solving exclusively on an individual, case-by-case basis. More and more schools are adopting school-wide practices to determine student needs and plans for interventions. Although this is a more efficient way to implement problem solving, the foundational principles on which this is based have not changed since 1990. As new demands, initiatives, and practices come into play, it is almost certain that problem solving will continue to improve.

What does our experience suggest about how to implement and sustain effective practices in broad-based reforms? First, create a state of readiness, laying the groundwork for the innovation and new practices with needs assessment and the formulation of shared commitment to guiding principles. Second, begin initial implementation by developing a model with quality standards to clearly guide practice, formulating operational procedures to guide professional services, provide staff development, and direct resources towards agency priorities. Third, institutionalize by embedding new practices into all aspects of the system, including those structural functions of the organization that provide support and contingencies to those doing the work, and realign agency policies to support new directions. To promote depth of implementation, professional development with feedback on implementation is essential. Fourth, based on ongoing data collection of results, set a course for ongoing evolution of the innovation through continuous improvement. Finally, going to scale involves changes in norms, principles, beliefs, and ownership. Collectively, this process represents a shift in the agency's culture and how its members interact.

This article illustrates systemic change that has endured for over 15 years. Problem solving in HAEA will continue to evolve, change, and improve as new technologies become available and the needs of schools grow more complex. Although we have described the SEA and AEA actions, successful reform is not limited to planned events. There are intangible elements that are the glue holding the process together. Like Fullan (2005), we see that resilience, flexibility, persistence, and adaptability are essential leadership qualities in maintaining forward momentum in a reform initiative. Passion, commitment, respect for others' opinions, tact in how conflict is managed, and the will to persevere in the face of adversity are necessities. Uncertainty and chaos are predictable parts of the change process (Fullan, 1998). Despite the challenges inherent in a reform effort, Iowa leaders at all levels of the system (state, area and local education agencies, community agencies, and parent partners) demonstrated the will to succeed and courage to seek viable alternatives to the status quo. This meant being focused on improved student results rather than territorial professional issues. Iowa's change process was not a function of a mandate, rather a set of incentives and supports that enabled the use of guiding principles based on scientific theory. Upon reflection, we believe the combination of informed leaders, evidenced-based practices, and an enduring commitment for success led to sustainability.

Supplementary Material

This article is continued at HAEA's website. See "Scaling-up and Case Example," http://www.aea11.k12.ia.us/spr/SPRCaseExample.pdf. The text focuses on assessment and report writing using RTI concepts, illustrates how the HAEA has continued to evolve, use data for organizational decision making, and support HAEA staff in acquiring refined skills.

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Date Received: May 27, 2005
Date Accepted: April 3, 2006
Action Editor: Ruth Ervin ■

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