CHAPTER 2

The Systems Problem-Solving Model

OVERVIEW OF PROBLEM-SOLVING STEPS

In this book, we guide you through the process of addressing a complex systems-level problem that includes selecting a problem, analyzing the problem, developing a plan to address the problem, and creating follow-up practices to build into the structure of your school to manage the problem. The problem-solving model that you will use includes four steps: problem identification, problem analysis, plan development, and plan implementation/evaluation. To help you follow the steps of this model, we created an acronym for each step: *ID* for problem identification, *ANALYZE* for problem analysis, *PLAN* for plan development, and *CHECK* for plan implementation and evaluation. Each letter in the acronyms represents a substep that specifically addresses how to navigate components of the steps. To guide you through the steps and substeps, we developed forms for you to complete that guide you through the series of 10 meetings. We provide you with more details and directions on how to run the 10 meetings and complete all the forms in Parts II, III, and IV of the book; before you begin, however, we first describe how this model was developed and why it is effective.

EACH STEP IN THE PROBLEM-SOLVING MODEL IS IMPORTANT

Each of these four steps of problem solving (i.e., problem identification, problem analysis, plan development, and plan implementation/evaluation) plays a significant role in the process. It's important to note that the more clearly a team defines a problem, the more success that team will have in developing the right plan. The better that teams analyze the problem, the more likely they will find the correct reasons that the problem is occurring and will develop a plan that clearly fits the needs of the situation. It is not uncommon for teams to want to brainstorm solutions right away and to skip the steps of defining and analyzing the problem. We caution you against this, as doing so could cause years of work in the wrong

direction. For example, one school district eagerly implemented a new math curriculum across all elementary schools, only to discover years later that their middle school students lacked basic skills because their curriculum did not adequately address those skills. Had the district carefully considered the needs of all the students in the district, they could have saved years of work.

Similarly, when schools do not incorporate an evaluation plan when they implement interventions, they may waste time and money on ineffective programs. In the previous example, had the schools closely evaluated the results throughout the implementation of the math curriculum, they would have caught these skill deficits earlier and could have remedied them sooner. Teams often skip plan evaluation when implementing a plan and do not truly know whether a plan is working or not. The inclusion of this last step, plan evaluation, whereby teams evaluate their progress toward a goal and make revisions to the plan, helps ensure that the goals are eventually met or that the plan is revised if the goals are not being met.

This cyclical model provides the structure for teams to engage in a continuous process of reflection and adaptation toward attaining their ultimate goals. There is evidence that including these elements of reflection and adaptation (which occur in the plan evaluation stage) leads teams to higher levels of success and better performances as teams. In a study of 50 teams in different industries (e.g., manufacturing, service, public administration), researchers found that teams who reported a higher degree of *reflection,* such as regularly evaluating team processes and productivity, and a higher degree of *adaptation,* such as modifying existing behaviors or work structures as needed in order to meet a team goal or objective, also reported a higher degree of *performance* (i.e., attainment of a team goal) (Wiedow & Konradt, 2011). Thus, completing the last step in the problem-solving model is crucial for ongoing success and fosters the cyclical nature of the process. In short, teams never stop addressing the ongoing needs of their schools.

Without a clearly identified and analyzed problem paired with a well-thought-out implementation and evaluation plan, teams may fail to see any positive outcomes, leaving people with the common sentiment that change has failed yet again. Instead, when change fails, it is typically the failure to follow the necessary processes to make the change happen. For results, *all four steps of the problem-solving process must be followed*. We wish we could tell you that there were more shortcuts, but we cannot. We *can* tell you that the impact of your efforts will be worth the work that you invest. On top of that, following a problem-solving model with your team will sharpen your personal problem-solving skills in general. You will likely find that you can apply this model to any situation. The problem-solving model is, in essence, a universal approach to addressing problems.

THE PROBLEM-SOLVING MODEL IS A UNIVERSAL APPROACH

This basic problem-solving model can be traced back to the beginning of human history, and its application can be found in nearly every field. As human beings, we are naturally inclined toward problem solving and scientific inquiry. The problem-solving model is

another name for the scientific or experimental method. We begin with a general inquiry about a problem, generate ideas or hypotheses about what might be causing it, brainstorm solutions to the problem, and then test out or evaluate the solutions.

Benjamin Franklin, who was known as the father of collaborative problem solving, used this scientific problem-solving model during the 18th century. He would convene a group of diverse individuals in a local tavern to problem-solve the issues of the time. There was an emphasis on gathering diverse opinions and knowledge and then putting this knowledge into action (Step by Step Innovation, 2010). Similarly, fields of science have relied on the problem-solving model as the template to follow when engaging in scientific inquiries about ways to improve the growth of plants, decrease pollution, understand why people murder one another, or to cure diseases and illnesses (Science Buddies, n.d.), among many other areas of investigation. Businesses follow the problem-solving model to address complex challenges and to improve the products or services offered in models such as total quality management (TQM). Public policy and government agencies use the problem-solving model to address local issues and political concerns (Project Citizen, n.d.). With the emphasis on problem solving in nearly every field, it is no wonder that this model is regularly used in the field of education.

ORIGINS OF THE PROBLEM-SOLVING MODEL IN EDUCATION

There have been many variations and iterations of the problem-solving model in education. For example, in 1984, Bransford and Stein named the problem-solving model the *IDEAL* model (Identify the problem, Define the problem, Explore solutions, Apply chosen solutions, Look for Effects), and in 1989 and again in 2005, Deno adapted the IDEAL model to develop a data-driven method of solving problems. The steps included problem identification, problem definition, designing intervention plans, implementing intervention, and problem solution. A key tenet of the model is that the problem can be defined as *the discrepancy between what is expected and what is occurring in a situation, which includes the classroom, school, and community* (Deno, 1989). This foundation lays the groundwork for viewing problems as an *interaction* between the student and his or her environment and not just within-child factors.

With this key tenet as a foundation, the problem-solving model became even more widespread as it was written into law with the reauthorization of Individuals with Disabilities Education Improvement Act (IDEIA) in 2004 (20 U.S.C. § 1400). IDEIA promoted the response-to-intervention (RTI) model, which purported that students could not qualify for special education services unless research-based interventions had been implemented with integrity, using tiers of academic and behavioral support for all students. Whereas one tenet of RTI held that individual students should receive high-quality research-based interventions with integrity before being referred to special education, the other tenet underlying the RTI model held that schools should build a strong academic and behavioral system for all students. The intention was that schools would create this strong system *before* focusing solely on the needs of individual students, which is time-intensive and inefficient. In

the rollout of RTI, however, many schools interpreted it only as a way to address individual problems and convened "RTI teams" that were essentially individual problem-solving teams for individual students instead of teams that first considered revising the larger infrastructure to support all of their students.

Although the application of the problem-solving model to address student needs was a step in the right direction to provide evidence-based interventions for students, this case-by-case application of the model was ineffective. Again, what schools were calling *RTI* was really individual problem solving, and they were still not addressing the larger systems issues in their school (e.g., why so many students were being referred for special education). With this realization, educators in many states made a shift in their delivery systems toward focusing first on the needs of all students before focusing on individual students. This is now commonly known as the *three-tiered system,* with a differentiation of resource allocation to accommodate the needs of all students, some students, and a few students (Tilly, 2008). To shift the focus on the system, the term *multi-tiered systems of support* (MTSS) began to replace the term *RTI,* the idea being that schools should address their systems-level needs in addition to addressing individual students' needs.

To address the needs of a system (e.g., individuals at the classroom, grade, school, and district level), effective systems-level change must involve the systematic application of problem-solving procedures (Curtis & Stollar, 2002; Harvey & Brown, 2001; Valentine, 19991). Research suggests that problem solving is effective when applied to systems issues and should be used as a format for addressing larger schoolwide areas of need (Curtis & Wise-Metz, 1986). We can see this transition to the application of the problem-solving model at statewide levels, with many states (e.g., Florida, Oregon, Iowa, and Illinois) leading the charge (see Jimerson, Burns, & VanDerHeyden, 2007, for additional readings.) The four states mentioned are critical to the development of the systems-level problem-solving model described in this book, as we have worked in these four states and adopted many of their practices into this current model. Specifically, one of us (Rachel) brought the tenets of the problem-solving model from Florida; the other (Kelly) brought the tenets of the problem-solving model from Iowa and Oregon; and both of us have incorporated components from Illinois into this book.

DEVELOPMENT OF THE SYSTEMS PROBLEM-SOLVING CONSULTATION MODEL

The incorporation of components from previous models into this model is further described in this section. To begin, we incorporated a hypotheses generation model for solving individual academic and behavioral problems from the University of South Florida, where Rachel attended graduate school. This component was based on the referral question consultation (RQC) model. The RQC model is an approach that includes generating hypotheses that lead to referral questions and guide practitioners in selecting the correct assessments to answer those questions (Batsche & Knoff, 1994; Batsche & Ullman, 1983). You will see the inclusion of hypotheses and referral questions in our model. We incorporated an emphasis on the

alterable variables (environment, curriculum, and instruction) from Kelly's experience in graduate school at the University of Oregon. You will see this focus in the problem analysis phase of the model. The approach for the book is also based on her experience with systems-level problem solving at Heartland Area Education Agency in Iowa, where the MTSS model is implemented. Finally, from Illinois, we bring our experience with the Illinois MTSS network, a multiyear state personnel development grant that supports districts in scaling up their MTSS practices through training, technical assistance, and coaching. We also bring experience from a progressive Illinois special education cooperative, North Shore Special Education District (NSSED), and through involvement with a 2006 I-ASPIRE grant (Illinois Alliance for School-Based Problem Solving and Intervention Resources in Education) in the middle schools where Rachel previously worked. Both NSSED and I-ASPIRE also used a professional development model to train school districts on the problem-solving model by inviting principal-led problem-solving teams and their internal and/or external coaches/facilitators to a series of trainings (Peterson, Prasse, Shinn, & Swerdlick, 2007). All of these models included a highly structured and detailed approach to implementing the problem-solving model at all three tiers (i.e., universal, small group, and individual students).

Therefore, the hypothesis generation, instruction, and intervention focus that are incorporated in the problem-solving model used in this book are based not only on an adaption of several models that we have used in our professional experience but also on the writings regarding RTI (e.g., Batsche et al., 2006), MTSS (e.g., Averill & Rinaldi, 2011), and positive behavioral interventions and support (PBIS; e.g., Simonsen, Sugai, & Negron, 2008). We have combined the tenets of these interventions into our problem-solving model to address systems-level issues. We have called this new model systems problem-solving consultation (SPSC), which captures the focus on the three key components: systems, problem solving, and consultation. Moving forward with this model, we acknowledge the great work of those who have developed and refined these models before us, and hope that our work serves to promote, tailor, and disseminate what has already been developed. When we find success with this model, we know we are standing on the shoulders of giants.

We attribute the development of the SPSC model not only to those who have worked before us but also to our students, who are now interns and practitioners in the field. We have been refining this model since 2008 in courses that we teach at the Chicago School of Professional Psychology as professors in the School Psychology Department. In our classes, students address the schoolwide needs and issues of the schools in which they are completing their field work, such as reading and math deficits, chronic behavior concerns, attendance and tardiness concerns, incomplete grades in high school, inadequate nutrition standards, overcrowded hallways, bullying, and lack of compliance with school uniforms.

Between supervising students and working directly in schools, we have experienced firsthand the impact of successful systems change. We've seen an elementary school create a reading intervention and data-based decision-making system from the ground up, a middle school develop Tier 2 reading and math systems, a middle school overhaul its homework practices for a more seamless and efficient system, and a K–8 building develop a PBIS system to combat behavior problems and improve school culture, to name just a few. We firmly believe that change is possible, and you will learn how through our problem-solving model.

STEPS IN THE SPSC MODEL

The purpose of this book is to provide a step-by-step guide to facilitate school change through the SPSC model. You will gain a general understanding of each step in the process and begin to think about how you can apply these steps to your school. It is important to note that these steps can be applied to any educational system beyond a school (e.g., therapeutic milieu, university program, after-school program), but for the sake of brevity, we use the school as the context for the SPSC model that we describe in these chapters.

As mentioned earlier, the SPSC model that we discuss in this book includes four steps—problem identification, problem analysis, plan development, and plan implementation/evaluation—and each of the four steps has substeps that specifically address how to navigate that step (see Table 2.1). These substeps are denoted by an acronym, each letter of which represents a substep (i.e., ID for problem identification, ANALYZE for problem analysis, PLAN for plan development, and CHECK for plan implementation and evaluation). For example, during plan development, we use PLAN, which represents Peruse the research, Let the team brainstorm ideas, Address the action plan, and Navigate the Implementation Guide. To guide you through all the steps and substeps, we have divided them across a series of 10 meetings. During each meeting, teams will address one to three substeps, depending on the complexity of the substeps. We guide you through the meetings using

TABLE 2.1. Problem-Solving Steps and Substeps

Meetings with related problem-solving step	Meeting no.	Substep
Select problem to address	1	
Step 1. Problem identification: Defining the problem (ID)	2	**I**dentify what is occurring and what is expected **D**etermine discrepancy
Step 2. Problem analysis: Determine why the problem is occurring (ANALYZE)	3	**A**sk "bright spot" questions **N**ame resources **A**llow team to brainstorm hypotheses
	4	**L**ist hypotheses in the form of questions
	5	**Y**ield a data collection plan and collect data
	6	**Z**ero in on the questions **E**valuate whether hypotheses are confirmed
Step 3. Plan development: Making it happen (PLAN)	7	**P**eruse the research **L**et the team brainstorm ideas
	8	**A**ddress the action plan **N**avigate the Implementation Guide
Step 4. Plan implementation and evaluation: Do it. Did it work? (CHECK)	9	**C**reate goals **H**onor the plan
	10	**E**valuate progress **C**elebrate successes **K**eep it up

a set of standard forms. The following chapters explain the purpose of each meeting, the focus of each step, and the directions to complete each form. Table 2.1 includes a list of the steps, substeps, and meeting goals. Blank forms are included in Appendix A at the end of the book—and can also be downloaded from The Guilford Press website—and practice exercises are provided in an online supplement (see the box at the end of the table of contents).

In Chapter 3, you will learn what you need to set up the SPSC process in your school, such as how to select a team and set meeting structures. Part II focuses on problem identification. Chapter 4 includes instructions on how to complete the steps of problem identification. Chapter 5 is an example of how a school completed problem identification, focusing on the academic issue of reading. Chapter 6 contains an example of how a different school completed the problem identification process, focusing on a behavioral issue of tardiness. These same schools are discussed in each part of the book as examples of what each step might look like in practice. Chapter 7 includes answers to frequently asked questions about problem identification. Part III focuses on problem analysis. Chapter 8 includes instructions on how to complete the steps of problem analysis. Chapter 9 follows the academic example of problem analysis. Chapter 10 follows the behavioral example of problem analysis. Chapter 11 includes answers to frequently asked questions for problem analysis. Following the same structure, Part IV focuses on plan development and plan implementation/evaluation. Chapter 12 includes instructions on how to complete the steps of plan development and plan implementation/evaluation. Chapter 13 provides an academic example of plan development and plan implementation and evaluation. Chapter 14 provides the behavioral example of plan development and plan implementation and evaluation. Chapter 15 includes answers to frequently asked questions for this step. Finally, Chapter 16 offers tips for implementation of the model.

All of the information in the chapters is based on schools with which we have worked; however, all identifying information has been changed. All names in the book are fictitious, and it is incidental if any name represents an actual person. In addition, information has been added or modified to provide the clearest and most realistic illustrations of each concept. For example, we may have compiled examples from different schools to show what type of data might be collected or what type of plan might be implemented. We hope to provide you with enough guidance and examples to spark your ideas, creativity, and motivation to make change happen in your school.