CHAPTER 1

What Is Curriculum-Based Evaluation and Why Should I Do It?

Welcome to the world of curriculum-based evaluation (hereafter referred to as CBE) and problem solving. The odds are you probably did not get here while searching for a "fun read" or a moving literary experience. But you have no doubt read or heard of (or experienced) the need for improved instructional services in critical content areas, particularly reading and math. This is especially true for groups of students at heightened risk for failure or dropout.

There are millions of students with serious skill and knowledge problems in the United States alone. These students need exceptional teaching, and educators have an increased responsibility to make informed decisions about what and how to teach them. If you are one of those educators, this is a book for you: using CBE can quickly and efficiently supply the information you need to inform your decision making. And this book explains how to use CBE!

Imagine that you found an amazingly rare penny that you want to set aside to see what it is worth. You put it in your pocket for safe keeping and absently toss it with other coins into the 5-gallon bucket of change you keep at home. Once you realize your mistake, you know you need to go through the coins in the bucket to find it. You could check out each coin until you find the right penny, but that would take too much time and you would get exhausted before you found it. Or you could use a systematic process to break down the search into more manageable parts whereby you could bypass the irrelevant parts such as looking at every nickel, dime, and quarter when you are looking for a penny. This is what CBE does. It breaks down the process of having to go through the enormous amounts (and sometimes literally piles) of information that we generate in schools and have available to us. It applies a systemic way of doing this so that remembering a complicated process is not an added layer of decision making to overwhelm you.

WHAT WILL I LEARN FROM THIS BOOK?

This book will teach you a systematic set of procedures to help you accurately and efficiently solve the learning and behavior problems your students experience. We begin by explaining the process of CBE. Then we provide and explain the specific steps you can follow when using CBE. In this first chapter, you will learn where CBE came from as well as why and when to use it (in other words, the background stuff). But after this chapter, the majority of the book focuses on direct application. We give a general overview of the CBE process and the decisions that go into it before presenting a more detailed explanation of those steps and decisions. Through it all we provide figures and examples to illustrate what we are talking about and a variety of forms and materials—the kinds of things that will be helpful for putting CBE into practice in your classroom or school. CBE is a logic system for thinking about, investigating, and making decisions about learning problems and selecting the most practical and probable solutions to address these problems. By applying what you learn in this book to your own practice, you will have the skills to solve problems of why students struggle to learn. You will also make the decisions that increase efficiency of instruction by matching *what* you teach more directly to areas of student need. You will be better equipped to assure that the time you spend on instruction is providing the intended benefits for student learning. This is more of a procedural guide than it is a textbook, so we cover the procedures more than the theoretical foundation or necessary background knowledge that can facilitate use of CBE.

WHAT SHOULD I ALREADY KNOW?

You should already have deep knowledge of the content, curriculum, and standards in the areas you are, or will be, teaching (*e.g.*, reading, math, writing). This is called *prior knowledge*, and you will be hearing a lot about the importance of prior knowledge in this book. Prior knowledge (i.e., what a person already knows about the task *before* a lesson starts) is one of the most important determinants of how quickly we learn. It is just as important for us as educators as it is for our students.

This book is not directly about reading, math, writing, or any content area. Nor is it about an introduction to assessment. Although we provide clarification of some terms and details that are especially important or likely to be confusing, we assume that you have a foundation in your content area and in the basics of assessment. If you feel like you need to refresh your memory, go ahead and do so. We'll be here when you are ready.

(*whistling*)

Welcome back! This book is about the procedures of a decision-making framework for planning instruction. Even more important, it is about thinking about the problems of students who are not learning and what to do about those problems. This may mean that you will need to reconsider your current understanding of "learning problems" as well as your approaches to assessment, evaluation, and instruction. It will require you to apply that deep knowledge you have of the content area(s) you teach. We provide description of the CBE

Process of Inquiry, procedures used throughout the process, and forms and guides to help simplify the implementation of CBE. However, there are also a few terms we want to clear up so that we are on the same page (so to speak).

SOME COMMON TERMINOLOGY

In routine conversation, *measurement, testing, assessment*, and *evaluation* are thrown around and used interchangeably, as if they all mean the same thing. However, in this book—they do not! These have always referred to different ideas and actions. That is why, as professionals, we need to use such terms with precision. And, in this book, because we describe a somewhat different approach to traditional educational decision making, we need to keep our terms consistent. Therefore, for the sake of clarity, every attempt will be made to keep them straight (not by making up new terms, but by sticking to traditional meanings). So, on to some terminology.

Measurement has been defined as the assignment of numerical values to objects or events according to rules (Campbell, 1940). That was good for Campbell in 1940 and is still working fine. However, the term is often used more generically as referring to all of the various tools we use to . . . (wait for it) measure things! In education the *tools* used to measure are commonly tests, observation instruments, interviews, and review techniques (used to carefully examine records and the products of student work). We go into these approaches in more depth in just a minute.

Measurement produces numbers. Numbers are incredibly useful when summarizing quantities and qualities that would take us a long time to explain with words—for example, "That Diet Pepsi costs a lot. It costs more than that candy bar and less than that book. Its cost is closer to the candy bar, but not quite the same," versus "That Diet Pepsi will cost you $1.49." With numbers we can communicate information about a student's behavior (or the products of his behavior) in the more manageable score format. Scores let us quickly communicate about and compare things with precision, but *only* if we all agree to use the same measurement rules!

Precision and usefulness of the information depend as much on the measurement rules applied as on the tests, interviews, reviews, and observations employed. Measurement rules tell us how to assign the numbers! These rules are a big part of any procedure's *technical adequacy.* Having measures with high technical adequacy is critical for valid and reliable decision making because the scores (i.e., the measurement results) from tests, observations, record reviews, and interviews inform our thinking. Simply put, when the data used to inform your thinking are not adequate, your decisions have a greater probability of being incorrect. Therefore, do not mess with the rules! Either give and score tools as they were designed and standardized or do not use or interpret them.

Assessment is the generic term for any of the various processes employed for collecting *information.* Assessment can be accomplished with a variety of methods. For our purposes the assessment methods include:

1. **R**eviewing products, work samples, files and records.
2. **I**nterviewing students, educators, peers, parents, or others.
3. **O**bserving students and/or educators during instruction.
4. **T**esting to prompt performance that is not apt to occur spontaneously, or that needs to be assessed under consistent conditions.

Collectively these are called the ***RIOT*** procedures. Application of RIOT is discussed later in the book.

One of the most important evaluation skills is that of choosing *which* assessment ***instruments*** to employ for *what* purpose. Another important skill is being able to formulate a good question for which your assessments will provide an answer. The powers of data are that they allow us to answer important ***assessment questions***. Of course, employing more than one assessment procedure can provide a broader and more complete view of someone's skills. However, all of the RIOT procedures might or might not contribute to a complete reading assessment or a complete social skills assessment. Therefore, giving every student the same set of tools may not be needed—and it also can be a waste of time! Comprehensive assessment need not be redundant or irrelevant. Besides, ***individualized instruction*** depends on ***individualized assessment***.

Evaluation is a thoughtful process that requires us to integrate and make meaning of the information before us. We engage in evaluation to collect information that will help us answer the important questions we have and allow us to make better decisions about what our students need to learn, and how we will go about helping them learn it. In essence, we use evaluation to help us understand things.

During evaluation we look at all available information in order to make a data-based ***decision***. So it is necessary to know what is or is not good information. Evaluation does not necessarily require us to collect more information through tests, observations, or inter-
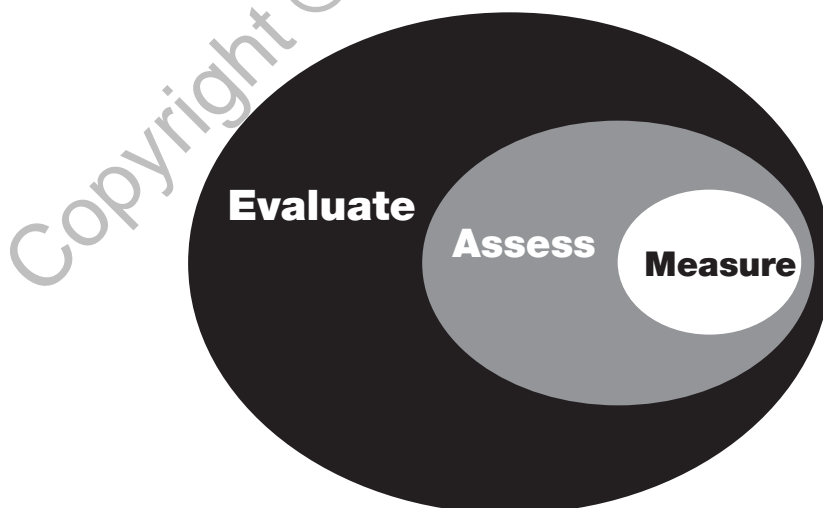

FIGURE 1.1. The relations among measurement, assessment, and evaluation.
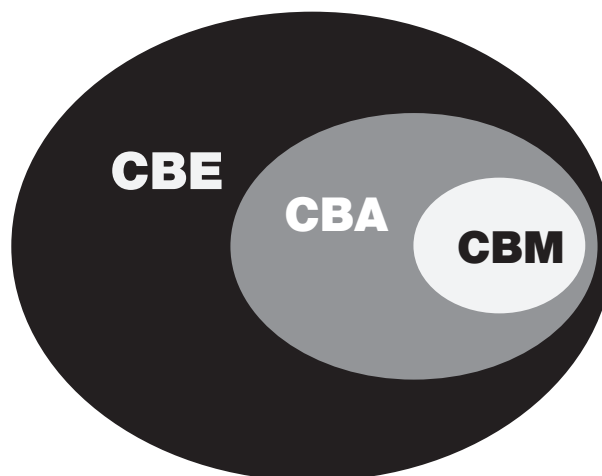
FIGURE 1.2. The relations among curriculum-based measurement (CBM), curriculum-based assessment (CBA), and curriculum-based evaluation (CBE).

views. What it does allow us to do is make informed decisions and reasonable conclusions about what all of the assessment results mean. Good assessment and evaluation only work if correctly interpreted.

Although we have presented measurement, assessment, and evaluation as different terms (because they are), they are obviously closely related. Figure 1.1 shows this relation. Measurement is one way of collecting information (albeit a very common one). This process of collecting information is assessment. The information collected via assessment is then used within a process to make decisions, that is, evaluation. So measurement is a subset of assessment is a subset of evaluation.

You are also likely to hear terms that include measurement, assessment, and evaluation that are curriculum based—*curriculum-based measurement* (CBM), *curriculum-based assessment* (CBA), and *curriculum-based evaluation* (CBE). CBM, CBA, and CBE relate in a similar way to the terms described above (see Figure 1.2). CBM (measurement) is a specific approach to measuring student performance on key skills within a content area. It is one type of approach to CBA (assessment), which is an approach to assessment that aligns the procedures and content to the content that is taught or expected to be learned (the curriculum or standards). CBA is one way of gathering information to be used within CBE. They serve different purposes, but are connected. To explain them a little more, we are going to start with a description of CBE.

WHAT IS CBE?

Curriculum-based evaluation (CBE) is an inquiry, problem-solving, and decision-making procedure. CBE was developed to help educators solve learning and behavior problems by making good decisions about *what* and *how* to teach. CBE is designed to increase the rate

of student learning by grounding lessons in both efficient evaluation and effective instruction. Through an awareness and analysis of the things a student is expected to learn (i.e., the standards or objectives of the curriculum), CBE procedures allow educators to more productively understand breakdowns that occur within any teaching–learning interaction. This is done through a set of straightforward procedures for making effective "what to" and "how to" teaching decisions.

CBE helps improve instruction and student outcomes by keeping the inquiry procedure inside the classroom. It does not, for example, spend time searching for student-specific disabilities, and it uses materials and procedures taken directly from both class curriculum and instructional procedures. This is necessary for *alignment* between the curriculum and assessment and is important because classroom teachers and special educators are all concerned with students who have learning problems. Although finding students who aren't learning is easy (most educators are very good at this), it is much harder to decide exactly what to do about the problems these students are experiencing.

Educators give students a lot of tests. In fact, other than the routine accountability and grade-producing tests given to all students, almost every other test given to children today is administered because of a learning problem, and the vast majority (roughly 85%) of those learning problems are first apparent because the student does not learn/progress as expected in the curriculum. Given that the *curriculum* is the foundation of grade-level *standards* to which we are comparing student performance, the logic of using assessment that is curriculum based should be obvious. If anything, given that the presenting problem is a failure to progress in the curriculum, using measures with no relevance to the curriculum ought to be considered unconventional (if not needless).

There are so many forms of measures and assessment available today, it might be said that we are *data rich* and *data poor* at the same time. Often we collect data, but don't use it to make good data-based decisions. Part of the reason may be our limited clarity about *why* some instruments are used in the first place! A second problem is that some instruments are simply used incorrectly or employed for purposes for which they were not designed. This sort of misapplication will often render results suspect, if not meaningless, and lead to poor decisions. Think about it: If you want to know whether someone is skilled at golf, you will ask them to demonstrate golf skills and measure the number of strokes in a round of golf. You would not have them shoot basketballs, kick a football, dive off a 3-meter board, or run the quarter mile! Yet we often approach reading problems by collecting information on students' instructional needs that are unrelated to reading skills. The CBE Process of Inquiry uses direct and aligned measures of what students are expected to know.

Traditional assessment with students experiencing learning difficulties has often focused on cognitive and perceptual strengths and weaknesses, but recent emphases on evidence-based practices and alignment to standards have dictated replacing these measures with curriculum-based ones. Schools have always measured students' levels of performance in a *summative* way (i.e., after instruction has occurred). This is typically done to determine whether students meet grade-level expectations. However, many of the instru-

ments were designed to describe these students' level of performance relative to others (i.e., they are **norm referenced**). Few are designed to examine a student's performance relative to a functional progression of skills. As a result, they have little utility when it comes to determining what a student has learned/mastered or finding what to teach next. CBE is designed to help you break down general areas of student performance (like reading or math) and examine the more specific skills and knowledge a student must master in order to meet grade-level standards. Focusing on these will have the greatest impact on learning. Therefore, CBE relies strongly on the use of CBA and particularly CBM to collect the **data** required for decisions.

WHAT IS CBA?

The term CBA is actually used in a few different ways. As we use it here, it is an approach to assessment that uses instruments that contain content either directly taken from, or very closely aligned with, a curriculum. CBA often relies on **mastery measures**—assessment instruments that contain sets of items on discrete skills that are expected to be taught within the curriculum. In this sense, it is useful and incorporated within instructional approaches such as **precision teaching** (see Johnson & Street, 2012).

The term was originally coined to refer to a specific approach, however. That has come to be known as curriculum-based assessment for instructional design (CBA-ID) because it contains direct links between assessment and intervention including a focus on acquisition rate—the rate at which a student can learn new pieces of factual knowledge (see Burns & Parker, 2014, for more information about CBA-ID).

To some, CBA-ID looks remarkably similar to CBE because both include rules for decision making and ties to instructional planning. There is certainly a good amount of overlap (they are both curriculum based, after all), but also some differences. First, CBA-ID focuses on determining a student's instructional level so that the instructional materials used are challenging, but not too difficult for the student to derive maximum benefit. This is defined in terms of accuracy on the task with specific ranges used (93–97% accuracy on reading comprehension; 70%, 85%, or 90% accuracy on drill tasks). Use of appropriate instructional materials is important in any decision-making system, but CBE also focuses on rate of performance and comparison to external standards. In this sense, CBE includes a focus on determining why a student is not learning sufficiently that can include other factors involved in the act of learning in addition to the materials used.

Second, CBA-ID relies on classroom materials for assessment (since assessment and instruction are often merged), using standardized procedures. These are sometimes referred to as **curriculum-derived** materials because they are taken directly from classroom materials (i.e., the curriculum). CBE uses a combination of classroom materials and **curriculum-independent** materials that represent the same task or skills, but that are novel to the student (i.e., there is no chance of practice effect because of differences in prior exposure to the materials). This is why CBE relies heavily on CBM.

WHAT IS CBM?

CBM is a set of consistent, evidence-based assessment procedures and the content-specific tools that use them. These tools are designed to be relevant to instruction because they offer a direct method to assess skills and when used to monitor progress provide direct information about what instruction is effective and how instruction influences the rate of learning. CBM measures are regularly composed of:

- A set of standard administration and scoring rules.
- A timing device.
- A set of materials (e.g., reading passages, sheets of math problems) that represent the contents of the curriculum.
- Explicit criteria for judging performance.
- Consistent forms and charts for recording, summarizing, and presenting/interpreting results.

Of course, to be useful, all assessment/measurement must be carried out correctly! With CBM this is not difficult because it involves tasks and processes that are already common to students in the classroom. For example, the directions are straightforward and easy to master. The tools themselves require the student to engage in tasks that are no different than those he would normally do during class (e.g., read text, write a paragraph, solve computation problems). When the student performs these tasks, he is typically timed using a stopwatch so that his level of performance can be scored in terms of both the number of responses made correctly and incorrectly per minute. Last, the student's results are charted on a graph or entered into graphic software so that trends in learning can be analyzed over time. There are a number of books and resources on CBM and the uses of CBM that are readily available and would be helpful to those unfamiliar with this assessment process (e.g., Hosp, Hosp, & Howell, 2007).

HOW IS CBE RELATED TO CBM?

CBE complements CBM's characteristics by providing validated guidelines for interpreting and using the results from the CBM tools. CBM tools are typically easy to obtain (by purchase or online) and use. Results are highly interpretable given their alignment with, and cross-referencing to, both the curriculum and instructional materials teachers use. Therefore, the impacts of teaching decisions are easily monitored through repeated CBM use. Each of these advantages makes CBM a perfect match with CBE.

Possibly the best way to understand the difference between CBM and CBE is by analogy. A longtime friend of ours named Marty used to describe the CBE–CBM relationship in terms of his golf game (at that time, Marty was trying to become a better golfer). Most everyone has experienced golf to some degree. It is rather common knowledge that the

number of *strokes* in a round of golf is the measure used for describing the adequacy of a golf game. Adequate proficiency in golf is called "par." This is the expected level of performance per hole or for the total number of holes you played. The further you are *above par*, the "worse" your game is (because you needed too many strokes to complete the course). The more strokes you use, the further you are from being proficient at golf.

Marty understood that he had work to do on his game. He had already realized that simply playing more or "trying harder" was not getting him the results he wanted. So Marty decided to go to a golf pro to get help improving his golf game by taking lessons. The golf pro told Marty that the reason for his poor performance was inadequate skill on a number of factors important to playing golf well. The pro looked at Marty's grip, his backswing, his follow-through, his hip rotation, and his stance in relation to the ball (to name but a few of these important skills). After the pro's assessment and evaluation of Marty's golf game, lessons ensued. The lessons were intended to improve Marty's skills in the areas where he had problems. The lessons were not directed at all skills needed for playing golf. However, as Marty mastered more and more skills, the expectation was that his overall stroke score would go down. By improving only skills targeted by the pro, Marty hoped to get closer to par without wasting time on things he already could do well. In fact, this is what happened. Because no time was spent teaching what Marty already knew, and time was not spent trying to teach skills Marty could not learn because they were dependent on other knowledge yet to be mastered, Marty moved quickly through his lessons because they were focused at the *correct level of difficulty*.

In this scenario, Marty's golf score per game (number of strokes) was the equivalent of a CBM score. It was what we call a *general outcome measure* (GOM). GOMs reflect the many subskills needed to be proficient at some higher-level skill (in this case, the whole game of golf) without separately measuring each of these subskills. But to focus his work with Marty, the pro did a *task analysis* and subsequent instruction on the important subskills that were not adequate (Marty's grip, stance, follow-through, etc.). These were the equivalent of a CBE subskills analysis one might do for a problem with math or spelling. Marty needed these skills in order to master the game of golf. Each was important in its own right. When put together, Marty saw his number of strokes go down (closer to par), indicating that he was improving his game.

It is critical to note here that the pro did *not* have Marty work on random skills. Marty's lessons were tailored to his needs. The specific skills that Marty worked on were all necessary for a good game of golf *and* they were all alterable through instruction. It was not important to know Marty's economic status, his ethnic category, how he got to the golf course, his shoe size, or any other unrelated features. Those were not relevant, important, or meaningful to improving his golf game or teaching him the skills he was missing. This is always true of learning. Some alterable and relevant factors need to be critically considered and addressed. Others are better left alone. We talk more about this throughout the book. You will learn a lot about *alterable* and *relevant* factors that directly affect student learning in schools. We will refer to this example when presenting critical features of the CBE process of inquiry and its relation to other data collection.

WHAT ARE THE MAIN ADVANTAGES OF CBE?

As we stated earlier, identifying students who are having learning problems is easy. Most teachers are very good at this. The bigger problem is figuring out *how* to make these students successful. That is where CBE comes in. CBE is designed to pinpoint key breakdowns and determine, with increased certainty, "what" to teach and "how" to enable learning. CBE is carried out with materials directly aligned with the classroom curriculum and tools that are efficient to use. Because of this alignment, the results are directly interpretable in relation to the curriculum being taught and the instruction being used. Also, learning can be directly monitored on an ongoing basis to ensure that expected improvements are realized. Another advantage is that the CBE process of inquiry can be adjusted in depth, breadth, and sophistication depending on the nature and severity of the presenting problem (more about the CBE process of inquiry later). Another main advantage is combating something called ***decision fatigue***. Have you ever noticed that at the end of the school day even simple decisions can be hard to make? It is because of a documented phenomenon where the more decisions you make, the harder it becomes to make decisions (Hosp, 2012). This is similar to how the more push-ups you do, the harder it becomes to do more push-ups—you become fatigued. A good way to ease this fatigue is by using a structured process and making the smaller decisions routine. This is what CBE does.

WHO USES CBE?

Because CBE is about making decisions to plan and evaluate instruction, anyone who needs to do these tasks could use CBE. In our experience, teachers are the ones who most often plan instruction for students—both general and special education teachers at all grade and age levels. However, being intended to make decisions particularly to solve problems with learning, often other educators are important to include in the process. This can include instructional specialists or coaches (such as math specialists or reading coaches), other itinerant specialists such as school psychologists or speech–language pathologists, and administrators and other instructional leaders. It can also be important to include the student's parents, or even the student himself (gasp!).

As you can probably tell from this exhaustive list of individuals who might set foot in a school, CBE is not necessarily a process that a single individual uses. It can be, but even when working through the process on one's own, it is important to collaborate with others, use various sources of information, and include others in the actual intervention planning, particularly if others will be responsible for implementing parts. This is one reason that we call CBE a *heuristic overlay*—the process has certain phases and actions that should be conducted, but they are general enough to be applied to a variety of content areas (academic or behavioral), grade or age levels, levels of aggregation (e.g., individual student, whole class), and individual or team applications.

HOW DOES CBE RELATE TO PROBLEM SOLVING?

We're sure you've heard of problem solving in some context or form. Quite simply, ***problem solving*** is any approach to developing solutions to problems (clears that up, doesn't it?). CBE is a systematic approach to problem solving—one that is specifically designed to aid in planning instruction for students who are having academic difficulty. It is about the thinking that underlies educational decisions. While there are many different ideas of what problem-solving processes could or should look like, most boil down to three general characteristics: ***problem identification***, ***problem analysis***, and ***problem solution*** (see Figure 1.3). Evaluation and validation is built into each stage or phase so that decisions are made based on collected information with as little inference required as possible. This is what ensures that our judgment has the highest possible chance of being good. The ultimate goal of using CBE is to maximize student learning through asking relevant questions, collecting data that are aligned with those questions, evaluating student performance and progress, and making decisions using a systematic process that compares outcomes to standards.

HOW DOES CBE RELATE TO FORMATIVE ASSESSMENT?

Another term that is gaining a lot of attention in education is ***formative assessment***, or sometimes formative evaluation. Like most terms, it is used in different ways by different people, but most agree that formative assessment is assessment *for* learning—collecting information that helps guide instruction. Formative assessment is generally folded into our instruction so that we can make continual decisions, things such as "Is Timmy paying attention?", "Can Susie do that by herself?", or "Does the class understand those directions?" All of this is information to let us know whether we need to (1) implement a behavior redirecting strategy to help Timmy, (2) provide additional guided practice for Susie, and/or (3) repeat
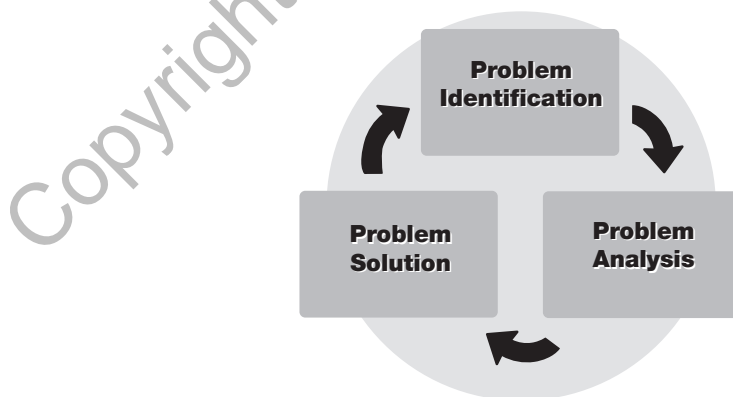

FIGURE 1.3. The three main components of any problem-solving process.

the directions. As will be evident later in this book, formative assessment is a vital component to the CBE action of implementing instruction. Formative assessment has been shown to improve student learning (Black & Wiliam, 1998) and should be considered within any instruction provided to students.

In contrast to formative assessment is ***summative assessment***, or assessment *of* learning. Summative assessment generally refers to collecting information in order to summarize what a student has learned and what he has yet to learn. The information we collect has a variety of formative and summative purposes, and both are important. As we explore CBE, you will see how both summative and formative assessment are essential components of decision making.

HOW DOES CBE FIT INTO RTI, PBIS, OR MTSS?

Response to instruction or intervention (RTI), ***positive behavioral interventions and supports*** (PBIS), and ***multi-tier systems of supports*** (MTSS) are terms that are also sometimes used together. Often RTI is used to describe an academic focus, PBIS a behavioral one, and MTSS a combined academic–behavioral focus. There are some differences in their use, but all generally include several core components or features. These are usually referred to as universal screening, tiered instruction based on data-based decision making around critical components of learning, and progress monitoring. That sounds pretty easy, but what does it really mean, and where is CBE most critical?

Universal screening is used to compare each student's performance to a standard of performance that is considered to be important for future success. In essence, we are looking to see whether all students are learning, are they on track, and are they profiting from core instruction? Therefore, screening is used to make individual decisions, and to make decisions about the overall health of the core instructional program. The application of CBE in the screening process is in the analysis of student results to find common areas of problem or concern. For example, if many students are not passing the screening measure in reading or math, the question of importance would be, "What are areas of concern that are causing that problem?" In reading, is the breakdown in areas of phonological awareness, vocabulary, phonics, fluency, or comprehension? In math, is the breakdown in numeracy, facts, operations, applications, or problem solving?

Tiered instruction is applied in an MTSS approach in order to address areas that require further supplemental or intensive instruction. The important considerations at this step are "Who is not meeting the standard?", "What are the specific reasons for not meeting the standards?", and "What are we going to do to address the identified reasons for not meeting the standards?" In order to answer these questions, it is often necessary to look in more depth at the common components of the curriculum and determine where breakdowns are occurring instructionally for the group and/or for individuals. CBE addresses this process of determining the breakdowns and deciding what we are going to do about them. It provides the process of inquiry needed to determine what and how to teach in order to intervene and correct areas of deficit and concern.

Last, *progress monitoring* is used to assure that the instructional changes put in place have the intended benefit. Monitoring allows teachers to effectively and efficiently determine whether the instruction they are providing is working, and just as important, it informs teachers of the need to make instructional changes. Although CBE is not technically a part of most progress monitoring, a lack of progress in the monitoring of students may suggest the need to apply the CBE process of inquiry to better understand where instruction and intervention need to focus.

WHAT IS THE CBE PROCESS OF INQUIRY?

As we stated earlier, we consider CBE a heuristic overlay. It is a system of decision making (the heuristic) that can be applied to different content or decisions (laid over a problem). In this sense, it provides a roadmap for getting from problem to solution. Think of different ways of getting directions from your house to another location. One option is to pull out of your driveway and just start driving. Maybe you have an idea that your destination is to the west, so you head that way. You could certainly arrive at your destination, but it is unlikely that you will take the shortest or fastest route. You are more likely to take some wrong turns and the trip will be a lot longer than you needed it to be. A second option is to look at a map and plot the route. You have a general idea of how to get there—one that looks specific before you start driving. However, once you start driving you find that you have to refer back to the map for some of the specifics such as where to turn and which direction. It will be a more efficient way to get there than option one. The third option is to use a GPS. Tell it where you want to go, and it will plot out the full route from where you are now, including specific directions of where to turn and when.

Option three certainly sounds like the best one, doesn't it? For that reason, you probably expect us to equate CBE to a GPS. But it isn't. CBE is more like option two, the map. We hope this is not a surprise, but students and learning are different from roads. Roads are finite and concrete (sometimes literally). Very specific information can be input to your GPS about where roads are, how many lanes they have, what the surface is, what the speed limit is, and so forth. These are things the GPS software uses to plot your route. They are fairly consistent, but sometimes a difference arises. Construction and congestion may affect the surface, lanes, and speed. An alternate route may be needed. Again, these are finite things. Making decisions about solving educational problems is rarely that straightforward. For that matter, we consider teachers to be smarter than computers. There are a lot of things to consider when making a decision. Sometimes decision making needs to be a team process. In this way, a map is a more flexible structure for creating that plan. You can consider other sources of information such as having taken a certain road in the past, wanting to schedule stops for gas or meals, or that different roads may be more appropriate for the weather conditions. You might want to discuss this with any passengers you have. The key point is to balance efficiency (ease and speed of doing what you need to do) with effectiveness (accuracy of doing it). For educational decisions, a map lets you do this, whereas a GPS maximizes efficiency.

I'VE HEARD OF CBE BEFORE;
WHY DOES THIS LOOK DIFFERENT?

The first known sighting (citing?) of CBE was in a 1987 book by Ken Howell and Mada Kay Morehead, *Curriculum-Based Evaluation for Special and Remedial Education: A Handbook for Deciding What to Teach*. The ideas and procedures were related to prior work on diagnostic/prescriptive teaching, problem solving, and data-based decision making, but this is when it was synthesized into CBE. That text was revised two other times (Howell, Fox, & Morehead, 1993; Howell & Nolet, 2000). Through them all, you can see that, although there are advances in clarity and coverage, the process was made explicit via flowcharts that were a series of if–then decisions about exactly what to teach within a content area. Separate flowcharts were presented for each content area and in some cases even components of a content area (e.g., early literacy and reading comprehension). Over the years, these have been extensively field tested and many (possibly you) have found them extremely useful. However, there are a few reasons for the changes reflected in this book.

First, CBE was formerly applied as a sort of GPS-style system. With its relation to prescriptive teaching, CBE was created prescriptively. In this sense it provided a very clear guide for what to decide and why. When first developed and through a few revisions, this level of prescription was often necessary. The high level of content and procedural knowledge for conducting a detailed task analysis was not something that aligned with the pedagogical movements of the 1980s and 1990s and therefore teacher training. Today's teacher training provides much greater detail and therefore a greater ability to make the decisions within the framework.

Second, using a consistent process that is an overlay across various content areas is less complex for implementing CBE. Having a single procedure means it is easier to learn and apply because each use is a repetition, and as we know, more repetitions mean less time to mastery.

Third, the increasing emphasis on using methods and materials that have research demonstrating their effectiveness has led to a differentiation of some of the terms. Although we used to use such terms as *field tested* and *proven*, we now describe methods and materials as evidence based or research based. **Evidence based** means that there is rigorous, high-quality research that has examined that specific method or product. Prescriptive procedures (such as **standard treatment protocols**) require evidence-based support because specific directions for materials and strategies are included. A heuristic requires **research-based** support, meaning that there is rigorous, high-quality research that has examined some individual components to make sure that they work (e.g., use of formative assessment), and these are used without explicit mandates of when, where, and how.

Last, prescriptive approaches are usually more applicable for making decisions about one student at a time because of the explicitness of each decision. CBE has always advocated for aligning the intervention with the source of the problem (if the problem is that the information is not presented in the curriculum, it is the curriculum that needs changing rather than anything specific to a single student), but the prescriptive decisions are about

individual student performance. By using a heuristic overlay approach, the same procedures can be used to make decisions about groups of students, classrooms, grade levels, and so on.

WHAT ABOUT BEHAVIOR PROBLEMS?

For those who are familiar with the previous books on CBE, you know that there were specific chapters addressing social skills and task-related behaviors. Academic and behavioral problems often go hand in hand. Just because a student is having difficulty with math computation doesn't mean that the cause of that difficulty is a lack of computation skill; it might be heightened anxiety the student is experiencing because he is being bullied. In a similar vein, a student may be acting out because of the frustration that comes from not being able to read proficiently. Because CBE is a systematic process for what needs to be taught and how it should be taught, it is generally impossible to completely separate academics and behavior. However, there is only so much space in this book. Because of differences in the details of focusing on behavior problems versus academic problems, we focus on addressing problems that are primarily academic, but will include some examples that include related behavior issues. Other resources in the Guilford Practical Intervention in the Schools Series are dedicated to addressing behavioral problems, and we refer you to those because no single resource or approach can cover all of our educational needs.

THIS ALL LOOKS COMPLICATED; IS IT REALLY NECESSARY?

It may look complicated initially, but it will make a lot of sense once you get the basic ideas and learn the CBE process of inquiry for thinking about problems. And yes, *it is very important*! Being able to assess and evaluate *what* and *how* to teach is arguably the most important part of effective instruction. Without it you may be delivering great lessons to students who already know the content, or worse, to those without the prior knowledge needed to understand the lesson. Think of the golf analogy. What if Marty was good enough to play a round of golf and consistently score an 80 when par is 72? We might imagine that he would need less problem solving and instruction than if he consistently scored 120. The bigger discrepancy between performance and the expectation (par), the more in-depth consideration and instructional effort are required for meaningful changes to occur.

The CBE process of inquiry you will be learning allows you to look deeply into problems and their solutions. In-depth evaluation of the skills required that a student does and does not have will allow you to efficiently and effectively address your students' learning needs. Also, the CBE process of inquiry is flexible. It does not need to be any more complicated and "deep" than the severity of the problem you are encountering demands. Smaller problems will likely require less analysis and inquiry. In comparison, more severe problems will require more detailed analysis, deeper understanding of the missing skills, and more specific information about what and how to teach.

FRAMEWORK FOR THE REST OF THE BOOK

Before we move on to the chapters that detail the rationale for and process of CBE, we want to provide an advance organizer to describe what it will look like and explain some of the features you will find. This book provides you with a primer on the foundations of CBE. This includes what you need to know *before* undertaking the CBE process, what you need to know and think about *during* the CBE process, and what you need to do and be aware of *after* the CBE process. It's designed to introduce you to CBE, so there will be times when you feel that the information is relatively basic or simple. This is due to the need for building a strong foundation for more complex information and tasks (as well as the amazing clarity of our writing). The introductory nature of the book also means that it is not comprehensive. We cannot provide an example or caveat for every potential concern or problem that might need to be addressed in an educational setting (imagine the size of that book). Rather, our intent is to provide a framework for decision making that you can apply to solve the problems you encounter in your professional life. The book is laid out to walk through that framework in a sequential fashion.

What to Expect from Each Chapter

• **Chapter 1.** Been there, done that. It answers all those questions you had when you first picked up the book and gives you the reasoning for why you are going to read the rest of it by placing CBE in the context of educational practice and need.

• **Chapter 2.** This chapter provides a summary of some foundational concepts of CBE. Without a consistent understanding of these foundations, the CBE process will not be as efficient or effective as it could be. There are some characteristic ways of thinking that guide what we do and why we do it. Like good instruction, we present these in an explicit manner because the greater your awareness of them and how you experience them, the more effective you will be in using CBE.

• **Chapter 3.** When building a house, carpenters need to attend to specifics of where nails, studs, and walls go, but they always have the blueprints handy for reference. This chapter is the blueprint for CBE. It gives a bird's-eye view—an overview of all the different phases, actions, and questions that make up the CBE process. When going through the rest of the book (which is more detailed), if there are times when you feel like you are getting caught up in the details, this is the chapter to review for that big picture.

• **Chapter 4.** The CBE process is divided into three distinct phases that are composed of different actions and purposes. We have broken the detail chapters out by each specific phase. This chapter details *Phase 1: Fact Finding.* Fact finding is about bringing together all the information that might be relevant for making decisions about the problem you are trying to solve—learning difficulty by a student or students you work with.

• **Chapter 5.** This chapter details *Phase 2: Summative Decision Making.* Once the facts have been collected and the problem confirmed, summative decision making is the detective work to identify why the problem is occurring from the perspective of what can be

done to solve it. In our experience, this detective work is most often neglected in education. Educators are solution focused and want to be helpful, so sometimes spending the extra time to ensure that we are applying an appropriate solution gets lost in the shuffle.

• **Chapter 6.** *Phase 3: Formative Decision Making* encompasses the heart of what we as educators have been trained to do—teach! In thinking about explicit details of instruction design and implementation, this chapter also puts these tasks in the framework of the CBE process. The time spent collecting information and doing our detective work serves as the foundation for the implementation of instruction in this phase. Because there isn't enough space to give detailed descriptions of instruction or intervention in every content area at every level, we provide an overview of common characteristics and a few well-placed examples to illustrate the points.

• **Chapter 7.** Although we have been detailed in the previous three chapters that outlined the particulars of the three phases of the CBE process, and you have been very planful in your application of the CBE process to make decisions to solve educational problems, things happen. We realize that application of the CBE process, no matter how planful we are, does not always result in the outcome that we are looking for. So when this happens we have added a process for troubleshooting. Why be planful in implementing the process if you are not going to be planful in trying to determine why you didn't get the desired result? Once you have implemented CBE enough times to feel confident with the process, you might actually want to use some of the tips in this chapter for making formative decisions about the process. However, we don't recommend attempting that from the start because it adds layers of decision making and complexity. It would be like attempting a Foot Jam Endo when you were first learning how to ride a bike.

• **Chapter 8.** This chapter is a bit of a transition from the details of using the CBE process to systematic applications. Chapters 4 through 6 provide details about what you do and what questions to ask; however, there are additional "behind-the-scenes" questions that need to be answered to implement CBE. These are things like who will collect certain types of information, what materials and resources are available or need to be acquired, and what kinds of time management or scheduling are needed to ensure that we can be planful yet efficient. Chapter 8 address the school or district structures and procedures that might need to be considered for implementation of CBE.

• **Chapter 9.** This is a summary chapter that provides a conclusion to the book. It ties the details of practice and conceptual foundations together to bring you back to that big-picture blueprint. It also should serve as a motivator to reassure you that now that you have read about and learned the details of the CBE process, you can use it in your own practice.

• **Glossary, Resources, and References.** At the back of the book, you can find some additional information. First is a Glossary. This is a list of important terms throughout the book (yes, just like all glossaries). Any word or term that is both **bold** and *italicized* is included in the ***Glossary***. Next, the Resources section is a list of websites where materials and other sources are available. They are not included as references, but we feel they're pretty useful for CBE. Last, where there is a citation in the text of the book, the full reference is provided in the References section.

CBE Maxims

Throughout this book you will see various pullouts that are labeled "CBE Maxims." These are some quotes that express the essence of CBE. The reason these have been set aside is because we find that they can be useful as a set of mantras or "daily CBE affirmations." As educators, when we are fully engaged in teaching and making decisions, it is easy to lose sight of the big picture because we have to be so focused on the details. When we're in this detail-focused mind-set, it is easy to miss signs that indicate we should do something in particular or something different from what we're doing. These maxims can serve as prompts to remind us when we need to do something to help us keep the big-picture focus when mired in details, or to guide us to focus our energies on important tasks that will help us teach. Don't be afraid to print them out or write them on cards or slips of paper to place them in locations where they can be reminders (Ken had a student paint some onto little flower pots so she could keep them handy in her classroom). We each have ample experience using the CBE process, but still refer to these maxims from time to time. You will find the maxims in Chapters 2–6. In Chapter 7, the format is slightly different, in that it includes "Troubleshooting Tips" instead. They use the same format, but whereas the maxims are for key concepts in CBE, the tips are for practice.

Use of Terms and Examples

When speaking about the professionals who work in schools we will use the term "educators" rather than "teachers." This is because CBE can be useful for not just teachers, but also for other educators that can include intervention specialists, reading coaches, math coaches, instructional coaches, school psychologists, speech–language pathologists, and a whole host of others.

There are other times when we will present a specific hypothetical example. Rather than move among different teacher and student names, switching from male to female teachers and students, we are going to stick with a consistent example. When we provide a hypothetical example, we typically refer to Ms. Smedley, a second-grade teacher at Edsel Elementary. We also refer to other teachers and grade levels at Edsel when examining data aggregated to a classroom or grade level. Ms. Smedley's student who is experiencing a learning problem is Hubert.[1] You'll hear a lot about him.

Forms, Figures, and Tables

Throughout the book there are figures and tables to illustrate the concepts and strategies that we are discussing. Some will be helpful guides for your own use of data and for displaying information. Those that have lists or concepts that we felt might be handy as reference are also formatted as reproducible posters. You can keep them handy for reference or post

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[1]Ms. Smedley and Hubert are fictional characters. Any resemblance to real persons, living or dead, is purely coincidental.

them somewhere you have consistent team meetings to discuss data and decision making, such as a conference room.

We have also included a variety of reproducible forms that we find useful for organizing and guiding our thinking and doing when using CBE. Rather than include these in an appendix, where they would all be together for handy copying, they are included within the chapters where the information is discussed and they would be used at that point within the CBE process. Because of this, we know that you do not want to have to flip through the book every time you want to copy a certain form. Therefore, we recommend tabbing the pages with forms so that you can find them easily.

Apology for the Jokes

Last, throughout this book you will notice comments that you will occasionally recognize as jokes. Discussions of assessment, evaluation, and instruction can often devolve into extremely dense and dry treatments of the topic. We prefer to try to keep the mood light and the topic entertaining by interspersing some humor. Those who prefer the dense and dry texts have probably already stopped reading, so it's just us now. Let's have some fun while we learn.