The Data Collection Toolkit
Everything You Need to Organize, Manage, and Monitor Classroom Data

by

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About the Author

Cindy Golden, Ed.D., has more than 30 years' experience working with students with disabilities. She serves as an adjunct faculty member for the University of West Florida and as an autism consultant for Florida State University's Center for Autism and Related Disabilities. Before retiring from public education, Dr. Golden served as the assistant director and principal/psychologist of an educational and therapeutic program serving students with severe emotional and behavioral needs and autism. In the past, she served as a special education supervisor in a metro Atlanta school system, supervising the countywide autism and emotional/behavioral disorders programs, and she worked as a school psychologist for students with neurodevelopmental disabilities. Dr. Golden served 13 years of her career in the classroom, where she was elected Teacher of the Year twice.

Dr. Golden has an undergraduate degree in special education from the University of West Florida, master's and educational specialist degrees in school psychology from Georgia State University, and a certificate in educational leadership and an educational specialist degree from Kennesaw State University. She has a doctoral degree in inclusive education with a focus on autism from Kennesaw State University. Dr. Golden authored *The Special Educator's Toolkit: Everything You Need to Organize, Manage, and Monitor Your Classroom* (Paul H. Brookes Publishing Co., 2012), served as a contributing author to *Understanding Children with Autism Spectrum Disorders: Educators Partnering with Families* (Sage, 2012), and has been featured in a Q & A article in *Scholastic Instructor Magazine* and on an hour-long back-to-school show on Autism Spectrum Radio. She was the author of several popular blogs for parents and teachers of children with special needs and has written numerous online articles. Dr. Golden is considered an expert in the field of special education and is a popular speaker at local, state, regional, national, and international conferences, along with being a sought-after trainer of educators across the country.

Introduction
Becoming a Classroom Detective

In many respects, the world of the detective is parallel to the world of the educator. They both hypothesize, gather documentation, test their theories, map out timelines, look for evidence, persevere when there seems to be no clear answer, reinvestigate if necessary, and gather information by interviewing those involved. Their problems or cases are different, but they both require the "cold, hard facts," called *data*, in order to solve the case or find the answer to the issue affecting the student.

Data are evidence. Though teaching in a classroom is a softer science than working a crime scene, educators are required to deal in evidence and should use objective facts to inform their teaching practices and educational decisions. There are cases to be solved and questions to be answered, such as "Why is a student's behavior occurring?" "Is the academic intervention actually working?" and "Is the student making progress?"

Teachers need to collect data to confirm a hypothesis, to answer questions that may arise about a certain situation or student, and to solve a problem that may come up in the classroom. The mounds of raw data that the busy teacher collects will require organization. The teacher will need a way to present the data easily so that others can understand the findings.

In researching the detective lifestyle, I found several steps to be very important in helping a detective solve a case. I am going to call this list Detective Skills 101. When a detective is presented with a problem or issue that needs to be solved, he or she needs to tackle several steps. Likewise, the educator takes a similar course of action when collecting data to solve a classroom challenge. Consider how each step a detective takes to solve a case is also relevant to educators who are collecting data to resolve problems in their classrooms.

1. *Determine the problem.* What is the specific issue or problem to be solved? What objective, observable details are most relevant to the case?

   How this applies to the classroom: You must first determine the challenging behavior or learning issue at hand in order to decide which intervention to implement and how to effectively collect data to monitor progress. When addressing a challenging behavior, observe it objectively without an emotional connection or reaction so that it can be defined in neutral terms. Having a good understanding of the problem is a first step to solving it.

2. *Understand the terms.* The detective investigating the issues of a case must have a complete understanding of all that is involved in the case and be able to describe precisely what happened in clear terms.

   How this applies to the classroom: Is the behavior or the learning challenge operationally defined (e.g., defined in concise, observable, and measurable terms) (Cooper,

Heron, & Heward, 2007)? Two neutral observers working with the student should be able to understand exactly what the issue is and identify the behavior. This will ensure that the data taken will be precise and accurate.

3. *Nail down the timeline of events.* One of the first things a detective will do is to map out a timeline of events, which can uncover new leads and offer clues that can help solve the case.

   How this applies to the classroom: When and where the behavior or the issue happens is important. Does it occur in only one setting, during one activity, or in interactions with one person? Does it occur during a certain time of day? By investigating the preceding circumstances for a behavior or academic difficulty, the teacher can uncover potential issues that are impacting the behavior and look for solutions.

4. *Remain alert.* A detective must take in information gained from all five senses. Evidence may be seen, felt, or heard. Remaining alert to the details ensures that nothing is overlooked.

   How this applies to the classroom: When doing an observation, be sure to note everything. What did you hear, see, and experience in the classroom or learning environment? Did you observe the noise level, the organization of the learning environment, and the tone of verbal communication? What can you learn from forms of nonverbal communication? Were there any smells, bright lights, or distractions that could be causing sensory or visual stimulation issues for students? Be sure to acutely observe what is going on when the problem or issue occurs.

5. *Interview people, and request information from those in the environment.* A detective must continue to investigate by interviewing those involved in the case and gathering information. Those with firsthand knowledge will provide evidence that may be vital. What about getting background and historical information on those involved? This information may lead the detective down the path to solving the case.

   How this applies to the classroom: Have you reviewed the background information on the student and the issue? Have you read the individualized education program (IEP) or reviewed academic records? Maybe a conference with the parent, administrators, or other teachers involved with the student is in order. What about talking to the student? When appropriate, absolutely question and talk to the student so you can get firsthand information about his or her perspectives, needs, and experiences in the classroom.

6. *Treat everything as evidence, and follow every lead.* Detectives comb through the strangest things looking for clues that will help to answer questions and solve the case. Anything and everything can be used as evidence until it is shown to be unimportant.

   How this applies to the classroom: Have you considered everything that you saw or learned in the classroom and not overlooked what may seem like insignificant details? Carefully analyze all information gained during an observation, through review of background information and records, or during a conference.

7. *Document and take note of the facts.* Consider the classic depiction of detectives. They usually wear a trench coat and a hat and carry a tablet of paper to document everything they learn. Detectives deal in facts—not opinions.

   How this applies to the classroom: Have you collected permanent products from the student, such as work samples and other items? Have you documented your interviews and observations right away (since you are human and will probably not remember all the details later)?

8. *Persevere, and do not give up too soon.* There are some cold cases in criminal investigations that were solved years after the crime was committed. Someone did not give up and continued to investigate.

   How this applies to the classroom: Are there learning or behavioral issues that you have just accepted as "the way it is" because nothing has worked before? Have you given up too soon on a behavior change and just decided to manage or contain the behavior?

9. *Search the scene thoroughly, and do not be afraid to revisit the scene several times.* Detectives frequently must go back to the scene of the crime more than once, each time with fresh eyes and a new perspective, to ensure no evidence was missed.

   How this applies to the classroom: Have you collected sufficient data in the learning environment? Is it the right kind of data? Have you considered having a second or third set of eyes review the same behavior in order to get a different perspective or to make sure the data are accurate, valid, and reliable?

10. *Formulate a hypothesis, and test out theories.* Detectives always formulate a theory or a hypothesis. This provides a place to start, even though the hypothesis may change as the evidence points and guides in different directions. Investigating is a fluid process.

    How this applies to the classroom: Have you used the process of data analysis to get an idea of what is affecting the behavior or issue? Have you brainstormed a possible solution or at least some ideas of how to begin solving the issue? Have you tried things that did not work? If so, have you followed up with a new approach?

This book will help you to become a detective in the classroom in order to help your students learn and to solve challenging behaviors; it breaks down the overwhelming task of collecting data into manageable steps. For many teachers, data collection can seem intimidating, particularly on top of numerous classroom responsibilities. The mounds of raw data that the busy teacher collects will require organization. These data will also need a way to be easily presented so that others can understand the findings.

Without the appropriate skills or easy-to-use tools for collecting and analyzing educational data, teachers may not know where to begin. That is where this book comes in. This book is complete with practical tips and helpful tools that will assist you in creating an effective and efficient data collection system in your classroom, whether you work in a school or homeschool environment.

In addition to breaking down the task of data collection, this book provides a one-of-a-kind data collection tool called a Quick-Graph! Quick-Graphs are self-graphing data collection tools that lighten the load by allowing you to create visual graphs while collecting raw data, taking care of two steps in one. As you read, you will also encounter quizzes, other types of printable data sheets, handouts, and true-life stories that make the information real.

The book is organized into four sections:

• *Section I: Preparing for Data Collection* provides the basics of classroom data collection and takes you step-by-step through all you need to know to begin effectively collecting data in your classroom.

• *Section II: Collecting Your Data* is about the process of collecting and graphing a variety of data—academic data, behavioral data, and IEP data for students with special needs—to help the students in your class. This section introduces you to Quick-Graphs, helpful data collection forms that allow you to create visual graphs while collecting raw data. You will learn ways to determine which type of data you will need to answer specific target questions and solve problems in your classroom, as well as how to create and organize an efficient and effective data collection system.

- *Section III: Data Analysis and Follow-Up* discusses how to actually use the data you have collected to maximize the benefits for your students. You will learn how to analyze trends and patterns in the data and use the information you have collected to make intervention and teaching decisions that will have a measurable impact on your students' learning and success.

- *Section IV: Your Classroom Data Toolkit* presents photocopiable/printable handouts and Quick-Graphs, with detailed instruction for use. These tools can be used in any classroom, homeschool, or other environment that requires data collection.

Each chapter in Sections I, II, and III is designed to build on your prior learning and provide you with the tools you need to use classroom data effectively. The following features are provided in each chapter:

- Mission (or objective)

- Questions to Investigate

- Definitions of Terms and Abbreviations

- Eyewitness Account

- Quick Quiz

Each chapter opens with a broader "mission"—an objective or end goal for what readers will learn about data collection—before focusing on specific questions that will be investigated and answered in the chapter. These focused questions help frame the discussion and organize the most pertinent information. The beginning of the chapter also provides you with all the facts you need to understand the content that follows, providing clear, simple, operational definitions of key terms that you will encounter as you read.

Other useful features include Eyewitness Accounts that present real, firsthand challenges that educators face in collecting data in their classroom and numerous handouts that can be used in the classroom or for training purposes. These handouts can be placed in a notebook in the classroom for reference or distributed at staff trainings so that staff members can create their own data collection notebooks. Just as the traditional detective carries a notebook or sketchpad to take notes and collect evidence, an educator or other school professional can use his or her data collection notebook to record and organize important classroom data. (Appendix A: Building Your Data Collection Notebook: Handouts, Embellishments, and Extras contains photocopiable cover pages, handouts, and forms to include in a notebook or binder of your choice; see the About the Forms and Tools page for instructions on downloading printable copies.) Finally, each chapter ends with a Quick Quiz that allows you to review relevant concepts you have learned about data collection. Answers to the Quick Quizzes are included in Appendix B.

Are you ready to start thinking like a classroom detective? Let's get started!

REFERENCE

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

SECTION **I**

Preparing for Data Collection

What does data collection involve? Why do educators collect data, and what steps need to be followed to ensure these data are meaningful and can be used effectively? Section I introduces you to the basics of classroom data collection. It takes you step by step through the process of collecting data (Chapter 1) and explains in depth how to prepare for data collection by first determining a specific issue or problem and then defining a related target behavior or focus (Chapter 2).

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CHAPTER 1

The Step-by-Step Process of Data Collection
What You Need to Know

✳ **MISSION:** To learn the facts about classroom data collection, investigate why data are important, and introduce the basic steps of the data collection process

QUESTIONS TO INVESTIGATE

- Why should I collect data in my classroom?
- Is collecting classroom data actually going to make a difference?
- In what environments can data be collected?
- What are the basic steps to data collection in any environment?
- After collecting data, what should I do next?
- Does the data collection process work the same way for RTI and MTSS?

DEFINITIONS OF TERMS AND ABBREVIATIONS

Analysis   The examination and interpretation of data.

BCBA   Board Certified Behavior Analyst; a person who has extensive training in the field of behavior analysis and is certified by passing a test and undergoing hours of supervised field experiences. He or she is experienced in dealing with behavioral challenges.

BIP   Behavior intervention plan; an individual plan of interventions used to target specific behavioral challenges.

Data   Systematically collected information about a student's academic and/or behavioral performance. Data can be qualitative (typically presented in narrative form as a description) or quantitative (typically presented as numbers).

FBA   Functional behavioral assessment; a problem-solving process in which a behavior is measured and examined in a methodical manner so that the function of the behavior can be determined and appropriate interventions can be implemented. It involves observation and the collection and analysis of data.

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MTSS Multi-tiered system of supports; a global framework of supports created and measured to meet the needs of all students.

RTI Response to intervention; a type of multi-tiered system of supports (MTSS). RTI is a tiered approach to providing and measuring the effectiveness of varying levels of interventions for all students.

Target behavior The behavior or skill on which you are focusing. It is the specific behavior you are going to observe and measure. The target behavior should be defined in clear terms so that all individuals involved in the observation or measurement of the behavior understand exactly what to look for. For example, "inappropriate behavior" is not a target behavior but "talking out in class" is.

Task analysis Systematically breaking down a complicated task into discrete steps that can be easily observed. For example, "making a sandwich" is an everyday task that can be broken down into small, discrete steps that can be taught, observed, and measured.

Visual analysis Presenting summarized data in graph or chart format so that anyone can easily determine trends, patterns, and discrepancies.

Your mission in this chapter is to acquire a foundational understanding of the data collection process—to learn the basic steps for collecting evidence in the classroom to solve learning and behavior issues so that students can succeed. Many educators are intimidated by the prospect of collecting data, and new teachers in particular may not know where to begin. Consider the following Eyewitness Account from a new teacher.

👁 Eyewitness Account

As a first-year fourth-grade general education teacher, I was eager to get started in my new classroom. I was a little nervous about the first faculty meeting, as it is a half-day workshop before the school year starts, but mostly I looked forward to the experience. During this workshop, the principal began by talking about the classroom setup, scheduling, and the fun things the school planned to do during the school year. I was confident and happy, as these were the reasons I went into teaching. I thought to myself, "I have this covered." The principal then began talking about progress monitoring, inclusion of students with IEPs [individualized education programs], and the mandated requirements of data collection, and I suddenly felt much more nervous than excited. At a break in the meeting, the special education teacher approached me in order to let me know that my classroom will include some of her students who have IEPs, FBAs [functional behavioral assessments], and BIPs [behavior intervention plans]. She said that the BCBA [Board Certified Behavior Analyst] for the county would be working with me on designing and monitoring interventions for these students. I walked away with my head spinning. How was I going to handle all of this in addition to the curriculum and management of the classroom? I didn't even have a clear understanding of all of the acronyms!

—Jeannette Torres,
First-Year Fourth-Grade Teacher

Jeanette is struggling. She has the training to be a terrific first-year teacher, and she is excited about many aspects of her chosen career. She feels prepared, but she is overwhelmed by some of the details of her new job. Data collection is one of those details. Although Jeannette is a general education teacher, she is still required to collect data in her

classroom. Some teachers might be wondering why data collection is important, which is the first question explored in this chapter.

WHY SHOULD I COLLECT DATA IN MY CLASSROOM?

Data are collected for a variety of reasons. Let me share a personal example. I recently had back pain and did not want to go to the doctor. I thought, "I'm relatively bright, and I solve problems on a daily basis. Unless there is a medical reason for my pain, I can figure this one out, and if I can't, then I'll go to the doctor." So, as only a special educator/psychologist would do, I gathered a little informal data. I began with my target question: "Why has my back begun to hurt on a daily basis?" I then began charting my back pain, my timeline of activities, my sleep schedule, and objects I interacted with in my environment. After I had collected 4 days' worth of baseline data, I began to test my theories by implementing some interventions. I tested four theories with a combination of interventions, which involved manipulating items and activities in my environment while collecting data. I started a stretching routine; changed pillows; monitored shoe-heel height; and changed the hard, straight-backed, no padding, old wooden chair that I sat in for hours while working on the computer. Do you know what I found? The cause of the pain was the hard, straight-backed, no padding, old wooden chair! I changed chairs and had no more pain. Problem solved! This is only one reason for collecting data in everyday life.

So, to simplify, there are three reasons for collecting data in any environment:

1. To answer a question
2. To provide evidence to support or refute a theory
3. To measure progress

Educators want to do their jobs to the best of their ability. All educators struggle to find the time to do everything required of them. However, as Heward (2000) noted, they need to remember that "when practiced most effectively and ethically, special education is also characterized by the use of research-based teaching methods, the application of which is guided by direct and frequent measures of student performance" (p. 37). Data collection is therefore an essential responsibility when educating students with special needs or challenges. It is also an essential duty of general educators such as Jeannette and is beneficial for all students.

IS COLLECTING CLASSROOM DATA ACTUALLY GOING TO MAKE A DIFFERENCE?

Jeanette's eyes probably glazed over as she thought about all that she had to learn and do to collect data, and she most likely asked herself if data collection was going to have any real impact. You might be wondering, "Is learning about data collection actually going to make a difference in what I do in my classroom, how I teach, the interventions I use, and how much progress my students will make?" The answer is yes.

There is only one way to determine whether the interventions that you implement, the ways that you teach, and the classroom activities that you conduct have a positive impact on your students: by measuring student progress. Witt, VanDerHeyden, and Gilbertson (2004) stated that an intervention is considered "fatally flawed" if data are not collected on the intervention when it is being used with a student. They also said that the intervention is flawed if one of the following elements is missing: definition of the presenting problem, measurement of baseline performance, a goal for the intervention, and ongoing measurement of performance. This book covers each of these elements and shows how to implement them in the classroom.

IN WHAT ENVIRONMENTS CAN DATA BE COLLECTED?

Now that you understand that data collection is important and required, it is time to consider where data should be collected. As was the case with Jeanette, data often need to be collected in a general education classroom that includes students with a variety of special needs. Teachers such as Jeanette are responsible for implementing accommodations and modifications to the curriculum as outlined by each student's IEP. If data are required, then these teachers may also be responsible for collecting them in their classrooms. In addition, data can be collected in special education classrooms, whether the classroom is a pull-out or self-contained setting (Fisher & Frey, 2013; Jimenez, Mims, & Browder, 2012; Lane & Ledford, 2014). Your students' academic functioning, social functioning, and behaviors do not stop once they walk out the classroom door. Can data be collected on the bus, in the hallway, at the media center, on the playground, and in the gym? Should data be collected in these settings? If applicable and appropriate, then of course!

As a psychologist, I completed hundreds of psychological evaluations on students. If the presenting question was to rule out behaviors that may or may not be typical of a student with autism spectrum disorder, I would have been remiss if I observed the student only in the classroom setting. In a classroom, everything is controlled. Peer groups are usually structured, tasks are outlined, and informal communication is limited. The adults in the classroom typically create a structured environment and guide interactions. Thus, the ritualistic behaviors or social-communication challenges of a student who is possibly functioning on the autism spectrum may not be visible due to the controlled surroundings.

The student observations that I most disliked doing were those in which the student was quiet, reading silently, or taking a long test and therefore had no chance to interact with people around him or her. These observations were not very helpful. However, if that same student were placed on a playground with peers, I might see a very different child. I could observe peer interactions, verbal communication, nonverbal communication, responses to sensory input, gross and fine motor skills, and more. Because the child may behave, respond, and interact differently in settings outside the classroom, data collected only in the classroom environment may lead to results that are skewed, inaccurate, and incomplete.

Data should be collected in whatever environments the student participates, whether in the classroom, on the playground, in the cafeteria, on the bus, or in a homeschool environment. Specifics about the data collection—how, when, and where it is done, and who does it—may differ, but the same data sheets can be used, and the methods for determining the target behavior, analyzing and interpreting the data, and graphically depicting the summary of data are generalizable to all settings. This book presents several data forms, provides general steps to creating a data collection system, details methods of data analysis, and gives examples of how to discuss the data with others. This information can be applied to a variety of environments, including classrooms, homeschool settings, faith-based schools, private schools, private therapeutic settings, and more.

WHAT ARE THE BASIC STEPS TO DATA COLLECTION IN ANY ENVIRONMENT?

The best way to make a complicated and overwhelming task such as data collection easier is to create a task analysis of it. You may already have a good understanding of the five steps for collecting data in the classroom, but it never hurts to revisit them. Each of the steps is discussed in more detail in the upcoming chapters. See Figure 1.1 for a visual summary of the steps to data collection: define target, select method, implement collection, analyze and graph, and make decisions. Figure 1.1 is available in Appendix A as a full-page photocopiable handout for your data collection notebook; see also the About the Forms and Tools page at the beginning of this book for instructions on downloading a printable copy.
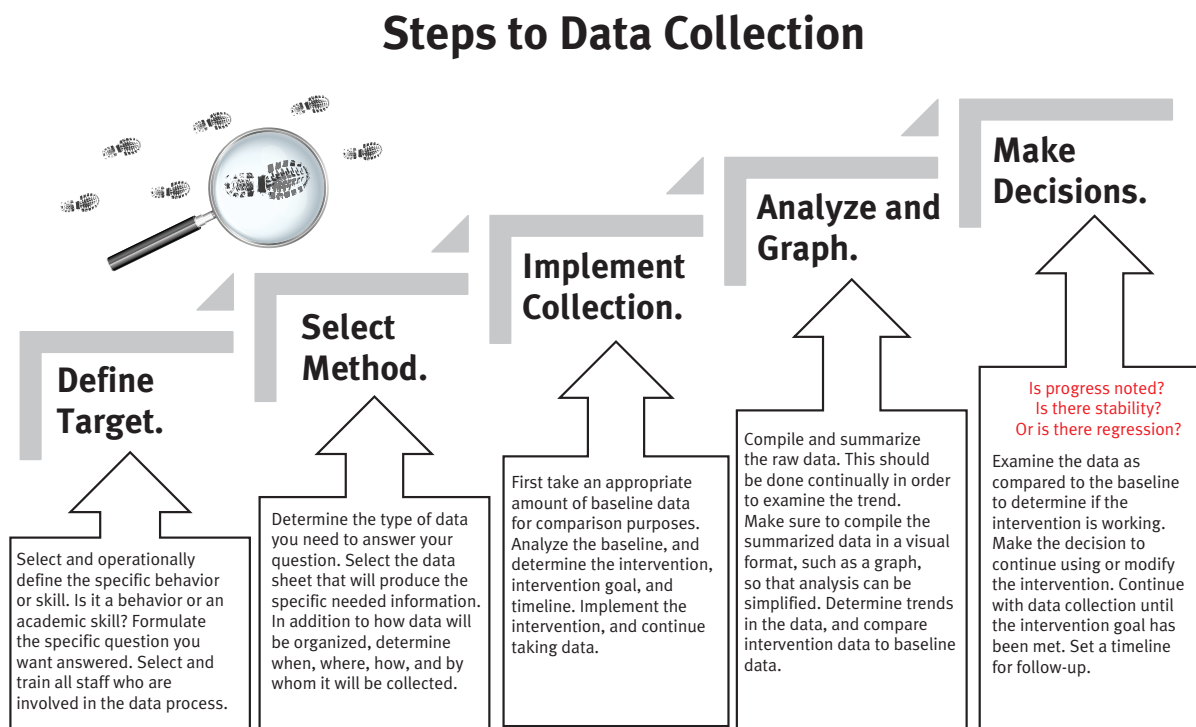
Steps to Data Collection

Define Target.

Select and operationally define the specific behavior or skill. Is it a behavior or an academic skill? Formulate the specific question you want answered. Select and train all staff who are involved in the data process.

Select Method.

Determine the type of data you need to answer your question. Select the data sheet that will produce the specific needed information. In addition to how data will be organized, determine when, where, how, and by whom it will be collected.

Implement Collection.

First take an appropriate amount of baseline data for comparison purposes. Analyze the baseline, and determine the intervention, intervention goal, and timeline. Implement the intervention, and continue taking data.

Analyze and Graph.

Compile and summarize the raw data. This should be done continually in order to examine the trend. Make sure to compile the summarized data in a visual format, such as a graph, so that analysis can be simplified. Determine trends in the data, and compare intervention data to baseline data.

Make Decisions.

Is progress noted? Is there stability? Or is there regression?

Examine the data as compared to the baseline to determine if the intervention is working. Make the decision to continue using or modify the intervention. Continue with data collection until the intervention goal has been met. Set a timeline for follow-up.

Figure 1.1.   Steps to data collection.

Step 1: Define Target

This is the beginning of the entire process—the point at which you set the course. Pretend that you are going a vacation. It's time for a road trip! You get the car packed, gas it up, make sure everyone is buckled in, and head out—but without a map or an idea of how to reach your final destination. You might accidently head in the opposite direction. You may end up eventually reaching your destination, but it is going to take a long, long time (and someone will inevitably get carsick from all the twists and turns)! It is the same scenario when collecting data. The focus questions and defined target behavior map out what you hope to accomplish by collecting data; they point you in the right direction so you will know exactly what you are measuring and can collect information purposefully with a set goal in mind.

First, you select and operationally define the specific behavior or skill. Is it a behavior or an academic skill? Formulate the specific question you want answered, then select and train all staff who are involved in the data collection process. Targeted questions are needed to ensure that the interventions make a difference in the classroom. Data collection will be useful if your questions are focused on the changes you want to see or the behaviors you want to investigate (Love, Stiles, Mundry, & DiRanna, 2008).

Step 2: Select Method

In this step, you will not only select the type(s) of data to be collected (i.e., data that, when analyzed, will answer your presenting question) but will also select the data collection tools you will use; how, when, and where the data will be collected; and who will be responsible for the data collection. This step is important because there is nothing like getting to the end of a 12-week data collection process, with mounds of data, only to realize that none of it addresses the initial issue! In other words, you wasted your time because the data did not answer the question at all. Therefore, you must determine the type of data you need to answer your question.

There are a variety of data collection tools to gather many types of information. For example, behaviors that have an observable beginning and ending point, with enough time between behaviors to distinguish between events, can be measured using an event or frequency recording data tool (Lane & Ledford, 2014). A behavior that lasts for an extended period of time can be measured using a duration data collection format. To select the tool or method that will best assist you, just think backward: What kind of answer are you hoping that the data will provide? Chapters 3, 4, and 5 will help you determine the type of data you need to answer your question. They contain data sheets to help you organize and track your data.

Step 3: Implement Collection

You have set your course and selected your tools. Now, it's time to collect your data! You should be consistent when collecting data. If you are not, your data may not be accurate, and this, in turn, will not help you to answer your question or address the issue at hand. When collecting data to determine the effectiveness of an intervention, you must first take an appropriate amount of baseline data for comparison purposes. Analyze the baseline data, and determine the intervention, intervention goal, and timeline. Then, implement the intervention, and continue taking data to see how the intervention is working.

Step 4: Analyze and Graph

You have your data—sometimes hundreds of pages of information—but the data will not be useful to you unless they are summarized, analyzed, and put into a visual format. Even if you are gifted in the ability to memorize numbers, internally visualize them, make comparisons among them, and see the trends or gaps in your head, you will still need to organize the data in a way that is easy for others to understand. So, graph it! You will easily be able to see trends, anomalies, and variances in the data, and that will lead you to make effective decisions about the implementation of interventions.

Step 5: Make Decisions

Data are not useful until they are used to make improvements. Do the data collected answer the question you initially presented? Do they show you if the interventions being implemented are working or if any progress has been made? Use the data to answer the initial question. Compare the summary of the data to that original issue, and make decisions based on the data.

Remember that data collection and the use of data in decision making are not only important for students receiving special education services but also for students in all tiers of response to intervention (RTI). Research studies stress the importance of using data to monitor student progress and the impact of the interventions implemented (Fisher & Frey, 2013; Kurz, Elliott, & Roach, 2015). A study by Jimenez, Mims, and Browder (2012) indicated a need for educator training in how to make data-based decisions for students with special needs, but the same research study also indicated that educators can master the data-based decision-making system with relative ease and, I will add, with the right training. Decisions about the use of interventions in the classroom should be immersed in evidence.

AFTER COLLECTING DATA, WHAT SHOULD I DO NEXT?

The answer to the final focus question is one word—analyze! Collecting raw data is nothing but a waste of time without conducting an analysis and then presenting the results in a visual format so that those individuals involved can understand the data and analysis. Many times, as a psychologist, I looked at the data in a student's folder only to be dismayed at the stack of anecdotal information that I was going to have to wade through in

order to make sense of the student's issue. There have also been times that I have been given a stack of daily point sheets with no explanation of their meaning. How was I going to determine baseline or postintervention progress? I was not there when the data were collected, so I did not understand the context, specifics of the type of data, parameters of the collection process, or even the exact presenting issue.

In the late 1980s, when I began my career, teachers were saying (just as they are today) that analysis and use of data in the classroom are very difficult and complicated (Grigg, Snell, & Lloyd, 1989). Teachers know they need to do it, but data collection seems so intimidating and cumbersome that teachers may procrastinate on actually using the data they have collected. They can end up with stacks of data on their desks. So, let's break data analysis down to its two parts so that the task seems more manageable.

The first part is the analysis itself. Do you need to determine the rate of a behavior, percentage of correct responses, intensity level of an outburst, or the level of prompting required for independent completion of a task? Determine what you need to know, then analyze the data to answer that question.

The second part of data analysis involves presenting the data in a visual format that can be understood by everyone working with the student. If it takes a BCBA to understand the collected data, then a teacher is not going to be able to explain the findings to a parent at an IEP meeting or use the data meaningfully in the classroom. Educators should visually present the data in order to make a difficult topic easy to understand. That is what this book is about—making the complicated task of data collection simple and providing a means of presenting data to others.

DOES THE DATA COLLECTION PROCESS WORK THE SAME WAY IN RTI AND MTSS?

The data collection process described in this book is absolutely in line with RTI and MTSS. MTSS is a framework of supports that is created to meet the needs of every student. Kansas MTSS (2008) defined it as "a coherent continuum of evidence-based, system-wide practices to support a rapid response to academic and behavioral needs, with frequent data-based monitoring for instructional decision-making to empower each student to achieve to high standards" (p. 1). RTI is also a tiered approach to making sure that all students' needs are met. Batsche et al. (2006) defined RTI as "the practice of providing high quality instruction and interventions matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying child response data to important educational decisions" (p. 3). Data are key to both RTI and MTSS. Does data collection work the same way in both programs? Yes. You or your school may utilize different data collection materials or comprehensive systems for classroom, school, or districtwide MTSS, RTI, or other tiered interventions, but the same basic principles are in place. Analysis of the data is key in order to monitor the progress of the student and the effectiveness of the interventions.

REVIEW OF THE FACTS AND A PEEK AHEAD

To wrap up, you should do the following when designing a data collection system in the classroom:

- Determine the presenting issue or the specific question to answer.
- Establish preintervention baseline levels by collecting data before an intervention is implemented.
- Create a visual or graphic representation of the summary of the collected data.
- Follow up postintervention using data to make decisions.

I hope this chapter has helped you to understand the importance of data collection and introduced you to the basics of what you need to know about collecting data to answer questions, solve problems, and implement interventions within the classroom. The good news is that the data collection procedures in this book are in line with RTI and MTSS and that the same basic data collection processes can work in a variety of settings. The Quick Quiz at the end of this chapter will test your newfound knowledge and assess what you have learned.

In the next chapter, you will learn more about preparing to collect data to address both behavioral and academic concerns, with an emphasis on how to determine the specific issue or problem that data will help to solve.

QUICK QUIZ

Use this short five-question quiz to review the chapter material, or use it for training purposes. It is a helpful way to check for understanding of the concepts and vocabulary. The answers to the Quick Quiz questions can be found in Appendix B.

1. What is the first step in data collection?
    a. Determining the target behavior or question to be answered
    b. Determining which data sheet to use
    c. Determining where you will collect the data

2. Systematically breaking down a complicated task is called what?
    a. Target analysis
    b. Task analysis
    c. Task examination

3. After analyzing the data, what is the next step?
    a. Graph and file the data for future use.
    b. Show it to the student.
    c. Determine if the intervention is working and what the next step should be.

4. Is it ever appropriate to collect data in a homeschool environment?
    a. Yes
    b. No

5. What does BCBA stand for?
    a. Board Certified Brain Analyst
    b. Board Certified Behavior Analyst
    c. Biologically Certified Brain Analysis