CHAPTER 1

Exploring the Foundations of Explicit Instruction

In the quest to maximize students' academic growth, one of the best tools available to educators is **explicit instruction**, a structured, systematic, and effective methodology for teaching academic skills. It is called **explicit** because it is an unambiguous and direct approach to teaching that includes both instructional design and delivery procedures. Explicit instruction is characterized by a series of supports or **scaffolds**, whereby students are guided through the learning process with clear statements about the purpose and rationale for learning the new skill, clear explanations and demonstrations of the instructional target, and supported practice with feedback until independent mastery has been achieved. Rosenshine (1987) described this form of instruction as "a systematic method of teaching with emphasis on proceeding in small steps, checking for student understanding, and achieving active and successful participation by all students" (p. 34).

In this chapter, we establish the foundation for the remaining chapters by exploring the following topics: (1) elements of explicit instruction, (2) the underlying principles of effective instruction, and (3) the research evidence supporting explicit instruction. We also respond to possible concerns about an explicit approach to teaching.

ELEMENTS OF EXPLICIT INSTRUCTION

Educational researchers (e.g., Brophy & Good, 1986; Christenson, Ysseldyke, & Thurlow, 1989; Gersten, Schiller, & Vaughn, 2000; Hughes, 1998; Marchand-

Martella, Slocum, & Martella, 2004; Rosenshine, 1997; Rosenshine & Stevens, 1986; Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995; Swanson, 2001) have identified a range of instructional behaviors and elements characteristic of an explicit approach to teaching. These 16 instructional elements are listed and briefly described in Figure 1.1. They are illustrated in more detail in subsequent chapters of this book.

FIGURE 1.1. Sixteen elements of explicit instruction.

1. **Focus instruction on critical content.** Teach skills, strategies, vocabulary terms, concepts, and rules that will empower students in the future and match the students' instructional needs.
2. **Sequence skills logically.** Consider several curricular variables, such as teaching easier skills before harder skills, teaching high-frequency skills before skills that are less frequent in usage, ensuring mastery of prerequisites to a skill before teaching the skill itself, and separating skills and strategies that are similar and thus may be confusing to students.
3. **Break down complex skills and strategies into smaller instructional units.** Teach in small steps. Segmenting complex skills into smaller instructional units of new material addresses concerns about cognitive overloading, processing demands, and the capacity of students' working memory. Once mastered, units are **synthesized** (i.e., practiced as a whole).
4. **Design organized and focused lessons.** Make sure lessons are organized and focused, in order to make optimal use of instructional time. Organized lessons are on topic, well sequenced, and contain no irrelevant digressions.
5. **Begin lessons with a clear statement of the lesson's goals and your expectations.** Tell learners clearly what is to be learned and why it is important. Students achieve better if they understand the instructional goals and outcomes expected, as well as how the information or skills presented will help them.
6. **Review prior skills and knowledge before beginning instruction.** Provide a review of relevant information. Verify that students have the prerequisite skills and knowledge to learn the skill being taught in the lesson. This element also provides an opportunity to link the new skill with other related skills.
7. **Provide step-by-step demonstrations.** Model the skill and clarify the decision-making processes needed to complete a task or procedure by thinking aloud as you perform the skill. Clearly demonstrate the target skill or strategy, in order to show the students a model of proficient performance.
8. **Use clear and concise language.** Use consistent, unambiguous wording and terminology. The complexity of your speech (e.g., vocabulary, sentence structure) should depend on students' receptive vocabulary, to reduce possible confusion.
9. **Provide an adequate range of examples and non-examples.** In order to establish the boundaries of when and when not to apply a skill, strategy, concept, or rule, provide a wide range of examples and non-examples. A wide range of examples illustrating situations when the skill will be used or applied is necessary so that students do not underuse it. Conversely, presenting a wide range of non-examples reduces the possibility that students will use the skill inappropriately.
10. **Provide guided and supported practice.** In order to promote initial success and build confidence, regulate the difficulty of practice opportunities during the lesson, and provide students with guidance in skill performance. When students demonstrate success, you can gradually increase task difficulty as you decrease the level of guidance.

(cont.)

FIGURE 1.1. *(cont.)*

11. **Require frequent responses.** Plan for a high level of student–teacher interaction via the use of questioning. Having the students respond frequently (i.e., oral responses, written responses, or action responses) helps them focus on the lesson content, provides opportunities for student elaboration, assists you in checking understanding, and keeps students active and attentive.
12. **Monitor student performance closely.** Carefully watch and listen to students' responses, so that you can verify student mastery as well as make timely adjustments in instruction if students are making errors. Close monitoring also allows you to provide feedback to students about how well they are doing.
13. **Provide immediate affirmative and corrective feedback.** Follow up on students' responses as quickly as you can. Immediate feedback to students about the accuracy of their responses helps ensure high rates of success and reduces the likelihood of practicing errors.
14. **Deliver the lesson at a brisk pace.** Deliver instruction at an appropriate pace to optimize instructional time, the amount of content that can be presented, and on-task behavior. Use a rate of presentation that is brisk but includes a reasonable amount of time for students' thinking/processing, especially when they are learning new material. The desired pace is neither so slow that students get bored nor so quick that they can't keep up.
15. **Help students organize knowledge.** Because many students have difficulty seeing how some skills and concepts fit together, it is important to use teaching techniques that make these connections more apparent or explicit. Well-organized and connected information makes it easier for students to retrieve information and facilitate its integration with new material.
16. **Provide distributed and cumulative practice. Distributed** (vs. massed) **practice** refers to multiple opportunities to practice a skill over time. **Cumulative practice** is a method for providing distributed practice by including practice opportunities that address both previously and newly acquired skills. Provide students with multiple practice attempts, in order to address issues of retention as well as automaticity.

As noted earlier, effective and explicit instruction can be viewed as providing a series of instructional supports or scaffolds—first through the logical selection and sequencing of content, and then by breaking down that content into manageable instructional units based on students' cognitive capabilities (e.g., working memory capacity, attention, and prior knowledge). Instructional delivery is characterized by clear descriptions and demonstrations of a skill, followed by supported practice and timely feedback. Initial practice is carried out with high levels of teacher involvement; however, once student success is evident, the teacher's support is systematically withdrawn, and the students move toward independent performance. The 16 elements of explicit instruction can also be combined into a smaller number. Rosenshine and Stevens (1986) and Rosenshine (1997) have grouped these teaching elements into the six teaching functions outlined in Figure 1.2.

FIGURE 1.2. Six teaching functions.

1. **Review**
   - **a.** Review homework and relevant previous learning.
   - **b.** Review prerequisite skills and knowledge.
2. **Presentation**
   - **a.** State lesson goals.
   - **b.** Present new material in small steps.
   - **c.** Model procedures.
   - **d.** Provide examples and non-examples.
   - **e.** Use clear language.
   - **f.** Avoid digressions.
3. **Guided practice**
   - **a.** Require high frequency of responses.
   - **b.** Ensure high rates of success.
   - **c.** Provide timely feedback, clues, and prompts.
   - **d.** Have students continue practice until they are fluent.
4. **Corrections and feedback**
   - **a.** Reteach when necessary.
5. **Independent practice**
   - **a.** Monitor initial practice attempts.
   - **b.** Have students continue practice until skills are automatic.
6. **Weekly and monthly reviews**

UNDERLYING PRINCIPLES OF EFFECTIVE INSTRUCTION

In addition to the explicit instructional elements outlined in Figures 1.1 and 1.2, several underlying principles of effective instruction have emerged from educational research conducted over the past 30+ years. These **principles** of instruction can be viewed as the underpinnings of effective, explicit instruction, while the **elements** of explicit instruction can be seen as methods to ensure that these principles are addressed in designing and delivering instruction.

In their review of teacher effectiveness research, Ellis and Worthington (1994) have identified and described these principles, and their delineation serves as the basis for this section of the chapter. The principles are briefly listed in Figure 1.3, followed by a detailed explanation of each principle. Ways in which the 6 principles and the 16 elements described earlier in the chapter interact during instruction are elaborated in subsequent chapters concerning lesson structures for teaching basic skills and strategies, concepts and vocabulary, and academic rules, as well as in the chapters describing effective delivery of instruction.

FIGURE 1.3. Principles of effective instruction.

1. **Optimize engaged time/time on task.** The more time students are actively participating in instructional activities, the more they learn.
2. **Promote high levels of success.** The more successful (i.e., correct/accurate) students are when they engage in an academic task, the more they achieve.
3. **Increase content coverage.** The more academic content covered effectively and efficiently, the greater potential for student learning.
4. **Have students spend more time in instructional groups.** The more time students participate in teacher-led, skill-level groups versus one-to-one teaching or seatwork activities, the more instruction they receive, and the more they learn.
5. **Scaffold instruction.** Providing support, structure, and guidance during instruction promotes academic success, and systematic fading of this support encourages students to become more independent learners.
6. **Address different forms of knowledge.** The ability to strategically use academic skills and knowledge often requires students to know different sorts of information at differing levels: the declarative level (*what* something is, factual information), the procedural level (*how* something is done or performed), and the conditional level (*when and where* to use the skill).

Engaged Time/Time on Task

The instructional variable of time has two interrelated aspects: how much time is spent teaching and how much time is spent learning. Although these two aspects interact, it is important to note that increasing instructional time alone does not always lead to an increase in time that students spend learning or in the total amount learned. Thus the *quantity* of instruction can be seen as a necessary but not sufficient component of learning; the combination of *quantity* and *quality* of instruction is the key to student success.

Several terms used in the teacher effectiveness literature are related to instructional and learning time. Understanding these terms is a prerequisite to understanding the research findings in this area.

Available Time

Available time is the amount of time available for all activities during the school day/year. For example, if school hours run from 9 A.M. to 3 P.M. there are approximately 6 hours of available time per school day. Of course, other activities (lunch, taking attendance, etc.) automatically reduce the amount of time available for academic instruction/activities.

Allocated Time

Allocated time is the amount of time dedicated for instruction in academic content (i.e., how much time a teacher allots or schedules for instruction in content areas, such as language arts, math, etc.). Some research in this area indicates that allocated time makes up about 70% or approximately 4 hours of the school day, with the remainder used for noninstructional activities. Increasing allocated time appears to have a slight positive impact on student achievement (Anderson, 1976; Walberg, 1986).

Engaged Time/Time On Task

Engaged time/time on task is the amount of time students are actively engaged in a learning task (e.g., listening to the teacher, solving a problem, listening to other students respond, taking notes, reading). Some research indicates that students are engaged during less than half of the time allocated for instruction, or approximately 2 hours per day (e.g., Anderson & Walberg, 1994; Haynes & Jenkins, 1986). The positive correlation between engaged time and achievement, while stronger than for allocated time, is still relatively modest.

Academic Learning Time

Academic learning time (ALT) is the amount of time students are *successfully* engaged in academic tasks at the appropriate level of difficulty (i.e., not too hard or not too easy). There is some indication that ALT occurs, on average, for only a small percentage of the day (i.e., about 20% of allocated time or 50 minutes per day) in many classrooms (Fisher et al., 1978). Such a small percentage is unfortunate, given the strong link between ALT and achievement. It is worth noting that many elements of explicit instruction and many teaching techniques that we describe in the remaining chapters of this book focus on increasing ALT. That is, they are designed to promote teaching appropriate tasks and increasing the amount of time students are engaged in these tasks at a high level of success. In addition to methods discussed later in the book, some relatively simple and straightforward ways of increasing both quantity and quality of instructional time are presented in Figure 1.4. In Figure 1.5, you will see how one teacher uses these guidelines to increase the amount of ALT in her classroom.

High Levels of Success

As noted above, increasing engaged time has a positive impact on student learning. However, it is when students are *both engaged and successful* that they learn the most. Merely engaging in a task or performing a skill is not useful if the percentage of errors is too high; in essence, students are spending their time practicing errors. Although student errors or incorrect responses are most likely to occur during initial instruction, you can make learning more efficient for students by minimizing and correcting these errors as soon as they occur. High success rates are positively correlated with increased learning outcomes; conversely, low rates of suc-

FIGURE 1.4. Ways of optimizing instructional time.

1. **Increase allocated time and time spent teaching in critical content areas.**
2. **Ensure an appropriate match between what is being taught and the instructional needs of students.** Consider the importance of the skill and the level of difficulty. Verify that students have the prerequisite knowledge to learn the skill.
3. **Start lessons on time and stick to the schedule.**
4. **Teach in groups as much as possible**. Teaching students in large and small groups increases both ALT and the amount of instruction for each student, as compared to other instructional arrangements such as one-to-one instruction or seatwork. Seatwork is useful for practicing newly acquired skills to build retention and fluency, but it is not a substitute for well-designed group instruction.
5. **Be prepared.** Often instructional time is lost because teachers don't have their teaching materials organized and ready for instruction. Thus they must spend time gathering their thoughts and materials that they could be using for teaching.
6. **Avoid digressions**. When teaching, stay on topic and avoid spending time on unrelated content. This is not to say that using appropriate humor or providing anecdotes or analogies to illustrate and illuminate content should be avoided, but rather that doing so should serve an instructional purpose.
7. **Decrease transition time**. **Transition time** refers to moving from one instructional activity to another. Often instructional time is lost through inefficient and disorganized transitions.
8. **Use routines**. **Routines** refer to the usual or unvarying way activities are carried out in the classroom. Routines save time because both students and teachers know how and what they are supposed to do without having to think or ask about it. In relation to instructional activities (e.g., group instruction, seatwork, cooperative groups), students know how and when they can get needed materials, ask for help, and so on. These routines are typically taught at the beginning of the year and reinforced as the year progresses. (Routines are discussed in detail in Chapter 5.)

cess are correlated with negative outcomes (Berliner, 1980). Brophy and Evertson (1976) analyzed the research on teacher effects (which we expand upon later in this chapter), and posited that optimal rates of correct responding should be about 80% during initial instruction and approximately 90–95% when students are engaged in independent practice.

In order for high rates of success to occur during instruction, several design and delivery factors must be considered. Briefly, some of the factors that increase level of success include teaching material that is not too difficult (although scaffolding procedures allow teachers to teach skills that otherwise might be too advanced or difficult for students to learn through more minimally guided teaching approaches), clear presentations, dynamic modeling of skills and strategies, supported practice, active participation, careful monitoring of student responses, and immediate corrective feedback.

FIGURE 1.5. Case study: Analyzing instructional time.

Ms. Talbot, a special education teacher, has decided she wants to increase the amount of time spent on academic instruction, now that she is aware of how important this principle is to student learning. To begin this process, she examines the amount of time she currently devotes to each academic area during the day. Although her current schedule of instruction is fairly full, she decides that she can increase the daily allocated time for language arts if she adds 10 more minutes. This will result in 30 hours of additional time that can be used for academic instruction over the course of the school year.

Ms. Talbot is also aware that merely allotting time for instruction is insufficient by itself, and that many things can get in the way of using the time optimally (i.e., keeping students engaged successfully). To begin the process of optimizing the use of allocated time throughout the school day, she spends the next week collecting some data: the number of transitions that take place between activities, how long they take, how much of that time is spent in nonacademic activities (e.g., students' asking questions about where things are or what they should do), whether she starts and ends her lessons on time, and so on. At the end of the week, she can readily see that there is a fair amount of "wasted" time.

She decides to develop and teach more routines, so that students throughout the school day know exactly what to do when it is time for the next instructional session (e.g., put away materials from the last activity, get out materials for the next activity). She also begins to make a concentrated effort to start each instructional session on time. She estimates that just doing these things will increase the potential amount of time students are actively engaged in academic activities by about 10 minutes a day or approximately 30 hours a year.

Because Ms. Talbot is aware that instructional time for each student can be increased by grouping whenever this is practical, she examines how she arranges instruction during the day. She notices that she spends a fair amount of her instructional time working one-on-one with her students. Although they certainly need this level of individualization to some extent, she also sees that she can increase the amount of instruction they get through grouping by skill level. She changes how she spends her time teaching by teaching in groups for half of the class period, working with individual students who need some "boosting" for a third of the period, and using the rest of the time for other arrangements such as well-designed peer and group activities. Because of these changes, students in her classes are now receiving more instruction than in the past.

Content Coverage/Opportunity to Learn

Content coverage refers to the amount of content actually presented (vs. time allocated) to students. Put another way, the more content that is covered well, the greater the potential for student learning. To distill this principle even further, we could say, "The more you teach, the more they learn." A number of decisions affect the quality and quantity of content coverage, including *what to teach*, *how to teach it*, and *how it will be practiced*.

Decisions about *what to teach* can be characterized as curricular decisions. You can increase content coverage by deciding what is important for your students to learn. Thus you can examine your curriculum, select critical skills and objectives, and discard or at least deemphasize those that are less critical. For example, you may decide that certain math skills (e.g., alternative bases, Roman numerals) may not be the most important skills to teach, and thus you may choose to spend more time covering more essential skills (e.g., computation, problem solving, measurement).

In addition, content coverage can be maximized when teachers focus on skills, strategies, concepts, or rules that will generalize to many other items or situations. For example, instead of teaching the pronunciation of each word as a specific entity, a teacher can introduce letter–sound associations and decoding strategies that can be applied to many words. Similarly, in preparing students for reading a passage, a teacher can examine the list of vocabulary terms and decide to stress terms necessary for passage comprehension and terms that would be encountered in the future, only briefly introducing the remaining words. Likewise, a social studies teacher may choose to introduce a "Big Idea" concerning historical events (**Problem–Solution–Effects**) and guide students in using this scheme to analyze numerous events (Kame'enui & Carnine, 1998). This teacher may also systematically introduce learning strategies for doing common classroom tasks, such as reading passages or writing a section summary.

In addition to decisions about *what* should be taught, content coverage is influenced by *how* skills are taught and practiced. Although this is essentially what this book is about, several instructional considerations are directly related to content coverage, and most of these considerations are related to *efficiency*. The more direct and parsimonious the delivery of instruction is, the more content can be covered. There are different ways that academic content can be taught; however, some instructional methods take more time, which has a negative impact on content coverage. For example, if the objective for a group of students is to learn how to write the letters of the alphabet, giving them dried lima beans, paper, and glue for the purpose of forming letters, while possibly fun, is less efficient and effective in meeting this objective than using explicit instruction procedures. Avoiding digressions, decreasing transition times, and increasing opportunities for students to learn by requiring frequent responses will also increase content coverage.

Grouping for Instruction

Students achieve more in classes in which they spend much of their time being directly taught by their teacher (Rosenshine & Stevens, 1986). Generally, group instruction has been found to be the most effective and efficient approach to teaching basic skills. Teacher-led group instruction most likely has this positive impact on achievement because it increases such effective teaching elements as clear explanations, modeling, practice, feedback, and frequent responding.

The instruction, whether in general education or specialized settings, need not be delivered to the whole class; small-group instruction is often more effective. Brophy and Good (1986), in their analysis of instructional grouping in general education, concluded that breaking a larger class into smaller groups is necessary when the class is heterogeneous in terms of skill level (a common occurrence in today's classrooms) and when students are beginning to learn academic skills.

Breaking a large class into smaller groups allows for more practice and repetition, as well as for closer monitoring. Later research on students with special learning needs (Elbaum, Vaughn, Hughes, Moody, & Schumm, 2000) found that instruction in groups of 6–8 was generally more effective than smaller or larger groups or one-to-one instruction. For example, if a special education teacher spends 60 minutes on math instruction using a tutorial approach and has 12 students in her resource class, on average each student would receive 5 minutes of instruction. If the teacher is able to form two skill-level groups for instruction, each student will receive about 30 minutes of instruction. In addition, students who are taught in groups rather than tutored have more opportunity for peer interactions and more practice in academically related skills, such as turn taking, listening to others, and making contributions.

Grouping for instruction is typically accomplished by putting students into groups based on their instructional needs and current functioning level. Although heterogeneous (mixed-functioning-level) groups have some advantages for certain instructional outcomes, grouping by academic skill level allows students to learn the skills most appropriate for them, thus increasing their success. This form of grouping should be used flexibly and should always be based on individual students' needs, which may change over time.

Scaffolding Instruction

Scaffolding in an instructional context is analogous to the scaffolding used when constructing a building. A lot of scaffolding is used as construction begins, but as the building begins to take shape, the scaffolding is removed in stages until the building stands on its own. Also, the purpose of scaffolding in both construction and instruction is the same: to allow individuals to do a task that could not be done without using it at first.

Through deliberate, careful, and temporary scaffolding, students can learn new basic skills as well as more complex skills (e.g., learning strategies, complex math operations, strategies for writing longer products), maintain a high level of success as they do so, and systematically move toward independent use of the skill. Scaffolding addresses several areas of learning difficulty exhibited by many students (especially those with disabilities), including attention problems, working memory deficits, and poorly organized knowledge (Swanson, 1999; Swanson & Siegel, 2001). The amount of initial support needed and the rate at which the support is withdrawn will vary, depending on students' needs. When scaffolding, teachers typically provide high levels of initial guidance and then systematically reduce support as students respond with greater accuracy. As guidance is reduced, students are required to perform with increasing independence until they are able to perform the skill on their own.

Scaffolding instruction can be applied by using several elements of explicit instruction:

1. Taking a complex skill (e.g., a multistep strategy) and teaching it in manageable and logical pieces or chunks.
2. Sequencing skills so that they build on each other.
3. Selecting examples and problems that progress in complexity.
4. Providing demonstrations and completed models of problems.
5. Providing hints and prompts as students begin to practice a new skill.
6. Providing aids such as cue cards and checklists to help students remember the steps and processes used to complete tasks and solve problems.

In summary, scaffolding is an effective approach for ensuring success and building confidence for students while they learn, because it provides the needed support that helps bridge the gap between current abilities and the instructional goal (Rosenshine, 1997).

Addressing Different Forms of Knowledge

Students often need to understand information at differing levels in order to use the information or knowledge strategically. Thus students should be provided instruction that targets different levels or forms of knowledge when appropriate. Although various taxonomies of knowledge exist (e.g., Bloom, 1956; Gagne, 1985; Kame'enui & Simmons, 1990), we focus on three forms of knowledge as categorized and described by Ellis and Worthington (1994). The first level is **declarative knowledge**, which can be characterized as factual-level knowledge, or *what* something is. Here are some examples of declarative knowledge forms:

- When asked to name a letter, can do so accurately.
- When asked what sound a letter makes, can say the sound.
- When asked what 6 times 4 is, can say/write the correct product.
- When asked what the months of the year are, can say them in order.
- When asked to tell the parts of an essay, can respond with "Introduction, body, and conclusion."
- When asked the meaning of *concentrate*, can accurately define it and provide examples of the word's use.

Procedural knowledge relates to *how* something is done. It involves knowing how to perform skills or steps in a process or strategy, such as the steps in solving a long-division problem. Some additional examples of procedural knowledge forms include being able to do the following:

- Fill out a check.
- Solve two-digit multiplication problems.
- Determine the main idea of a paragraph.
- Write a persuasive essay.

- Determine the pronunciation of a multisyllabic word.
- Take well-organized notes on a lecture.

Conditional knowledge refers to knowing *when* and *when not* to use a particular skill or strategy. Some examples of conditional knowledge include these:

- Being able to decide when to use a question mark to end a sentence.
- Knowing when to borrow from the next column in a subtraction problem.
- Knowing which reading comprehension strategy to use, based on the genre (narrative vs. expository material).
- Writing a product that reflects the desired topic, audience, and purpose.

Our purpose for presenting and describing these forms of knowledge is to stress that you not only should teach what something is, but, whenever appropriate, should also teach how something is done and when to do it. When you convey all three forms of knowledge to your students, they are much more likely to become independent, self-regulated learners.

How to Use the Six Principles

The six principles we have just finished discussing are highly correlated with student achievement. In Chapters 2–4, we describe how the elements of explicit instruction and the principles of effective instruction are applied and addressed during explicit lessons.

In discussing these *elements* and *principles*, we have constructed a number of lists. It can be tempting to treat these lists of instructional design and delivery procedures in a "cookbook" fashion (i.e., to follow the steps of the "recipe" exactly as presented). However, it is important to view these procedures in a more fluid manner. That is, not all elements are necessary in all instructional situations, and not all elements are used to the same degree for each skill or strategy taught. Just as master chefs do, master teachers rely on their knowledge of their "customers" to alter how they do things. For example, the amount of support provided via scaffolding will vary, depending on what is being taught (e.g., complex vs. simple skills, new content vs. familiar content) and to whom it is being taught (not all students need the same amount of explicitness or support). It is overly simplistic to attempt to reduce the act of teaching to merely using a specified set and sequence of steps. Effective teachers always supplement the recipe by adding their personality, humor, creativity, and enthusiasm. However, if key ingredients are left out of the recipe, the result can be disastrous. Consider what may happen if a teacher is teaching a group of students to use a new and relatively complex strategy, and the teacher omits verification of prerequisite skills, clear demonstrations of the strategy, supported initial practice, and multiple independent practice attempts with corrective feedback. This is definitely a recipe for disaster!

A CONVERGENCE AND ACCUMULATION OF EVIDENCE SUPPORTING EXPLICIT INSTRUCTION: A SUMMARY OF SELECTED RESEARCH

The purpose of this section is to summarize research from studies about the effectiveness of using an explicit approach to teach academic skills; this research was conducted in general education as well as special education classrooms. We present findings from several literature reviews of effective teaching behaviors published over the last 30+ years. In addition, we briefly summarize the findings of one of the largest educational studies conducted in the United States, which examined the effectiveness of various educational programs designed to help economically disadvantaged students. Our intent is not to present an exhaustive review of all published studies, but rather to succinctly build a case that research over time and from various perspectives provides a strong base of support for using explicit instruction to teach academic skills and content.

Research in General Education

Teacher Effects Research

Jere Brophy and Thomas Good published a chapter in the *Handbook of Research on Teaching* (Wittrock, 1986) entitled "Teacher Behavior and Student Achievement." In this chapter, they reviewed studies conducted from 1973 through 1983 in which the link between teacher behavior and student achievement was investigated. This type of research is often referred to as **process** (teacher behavior)–**product** (student achievement) **research**. Their review included studies from major programs of process–product research conducted in general education classrooms. This body of research included observational, correlational, and experimental methodologies; however, all studies focused on the relationship between teaching behaviors and students' academic outcomes. Typically, researchers conducted correlational studies by selecting a variety of instructional procedures, administering pre- and postachievement tests to students, and then identifying the instructional procedures and elements used by the teachers whose students showed significant gains (Rosenshine, 1997). In experimental studies, teachers were provided training in the use of procedures identified as being highly related to achievement in the correlational studies, to see whether their students would perform better on academic assessments. In most cases, students of the teachers who were using explicit instruction techniques had higher achievement scores than students in control classes.

Brophy and Good's (1986) integration of the findings across dozens of studies identified some overarching instructional variables highly related to student achievement, including several discussed earlier: engaged time, content coverage, and level of success. Another consistent finding was that the instructional elements (teaching behaviors) identified in this chapter typically resulted in better student achievement. Brophy and Good summarized their conclusions about effective teacher behaviors by stating:

> The second [theme] is that students learn more efficiently when their teachers first structure new information for them and help them relate it to what they already know, and then monitor their performance and provide corrective feedback during recitation, drill, practice, or application activities. For a time, these generalizations seemed confined to early grades or to basic rather than more advanced skills. However, it now appears that they apply to any body of knowledge or set of skills that has been sufficiently well organized and analyzed so that it can be presented (explained, modeled) systematically and then practiced or applied during activities that call for student performance that can be evaluated for quality and (where incorrect or imperfect) given corrective feedback. (1986, p. 366)

Others (e.g., Gage & Needles, 1989; Rosenshine & Stevens, 1986) have reviewed this era of teacher effects research and reached much the same conclusion: A structured, explicit, and scaffolded approach to instruction has a positive impact on student academic achievement.

Project Follow-Through

One of the largest general education studies conducted in the United States, Project Follow-Through, was originally intended to extend the efforts of preschool Head Start programs for economically disadvantaged students into elementary school (Watkins, n.d.). However, due to budget cuts, the focus of this project changed to one of identifying effective approaches/programs for teaching this population of students. The study was conducted over multiple years during the 1960s and 1970s and included tens of thousands of students across the country. The effectiveness of 12 programs was examined.

The researchers themselves categorized these programs based on the description and primary instructional emphasis provided by the program developers. Programs were categorized as (1) **basic-skills**, (2) **cognitive-conceptual**, and (3) **affective–cognitive** models. Basic-skills models emphasized directly teaching basic academic skills. Cognitive-conceptual models included intellectual skill development, learning to learn, problem solving, and other developmental approaches (e.g., Piagetian); affective–cognitive models emphasized self-esteem, problem solving, self-concept, and developing positive attitudes toward learning. All students in the study were administered a variety of measures that focused on the acquisition of either basic skills, problem-solving abilities, or self-concept.

According to Watkins (n.d.), the overall results indicated that in terms of measures of basic academic skill improvement, "The Direct Instruction model had an unequivocally higher average effect on scores in the basic skills domain than did any other model." Siegfried Engelmann and his colleagues at the University of Oregon developed Direct Instruction (see Adams & Engelmann, 1996, for a description and summary of research on Direct Instruction that includes Project Follow-Through). We offer Project Follow-Through results as support for a direct, explicit approach to teaching; however, it is important to point out that although Direct Instruction includes the majority of the elements of explicit instruction and is based on such principles as increasing on-task behaviors, high levels of success, and content coverage, it is distinguished from explicit instruction by its emphasis on curriculum design (Stein, Carnine, & Dixon, 1998). Aside from this curriculum-based distinction, the overlap of teaching procedures is extensive.

While it may not come as a surprise that one of the basic-skill models resulted in the largest improvements in academic skill performance, it should also be noted that Direct Instruction (along with a behavior analysis program) had the largest impacts on tests of affective measures; most models emphasizing affective development had average or negative impacts (Watkins, n.d.). Though certainly not confirmatory, these results lend support to the contention that success begets self-esteem and not the other way around.

Research in Special Education

Over the past 20 years, several published articles have synthesized various bodies of intervention research with students who have special needs, primarily learning disabilities. In this section, we summarize the findings of these publications as they relate to explicit instruction.

In 1989, Christenson et al. summarized findings of their research on instruction for students with mild learning disabilities. Their synthesis yielded a number of instructional factors that reinforced the need for well-organized and explicit methodologies for teaching academic content. These factors included (1) clear expectations about what is to be learned, (2) clarity of presentation, (3) multiple opportunities for student responses, (4) active teacher monitoring of these responses, and (5) frequent evaluation and feedback. Other factors identified were effective classroom management, creating a positive learning environment, allocating sufficient time for academic instruction, and ensuring a good match between instructional content and student needs.

Vaughn, Gersten, and Chard (2000) summarized findings of several research syntheses that were federally funded through the Office of Special Education Programs. Vaughn and her colleagues examined intervention research on a variety of topics, including instruction in written expression and reading comprehension, as well as grouping practices for students with learning disabilities. In the area of writing instruction, the authors analyzed 13 studies (all of which resulted in large effect sizes) and identified best practices in teaching expressive writing skills to these students. These practices included the following:

1. Explicit teaching of critical steps in the writing process, including models and prompts.
2. Explicit instruction in teaching writing conventions across multiple genres (e.g., persuasive essays, compare-and-contrast essays).
3. Guided feedback to students via teacher and/or peer feedback about the quality of their writing attempts.

When examining reading comprehension research, Vaughn et al. (2000) synthesized the results of two meta-analyses on the topic (Gersten et al., 1998; Mastropieri, Scruggs, Bakken, & Whedon, 1996). They concluded that instruction in reading comprehension "should be overt, and students should have multiple opportunities to practice the strategy under quality feedback conditions before they are expected to use the strategy on their own" (p. 105).

The last area investigated by Vaughn and colleagues dealt with the effects of instructional grouping arrangements (e.g., whole-group, small-group, pairs) on student achievement. They analyzed work by Elbaum and colleagues (e.g., Elbaum et al., 2000), who conducted a meta-analysis of 19 studies that looked at grouping methods and included students with disabilities. The highest effect sizes were associated with small-group instruction.

Kroesbergen and Van Luit (2003) concluded, based on their meta-analysis of over 50 studies of students with math disabilities, that explicit methods were more effective than less direct instructional methods such as discovery learning.

As part of a series of meta-analyses of intervention research, Lee Swanson (Swanson & Hoskyn, 1998; Swanson, 1999, 2001) attempted to identify instructional components or factors that predicted positive learning outcomes for students with learning disabilities. Based on an analysis of 180 published intervention studies, Swanson identified eight instructional elements that accounted for much of the impact of an intervention, regardless of the skill being taught (e.g., reading comprehension, writing skills). These instructional behaviors were similar to the ones described above. They include (1) skill sequencing, (2) segmenting (i.e., breaking down skills for instruction), (3) providing multiple practice attempts with accompanying feedback, (4) scaffolding by controlling task difficulty, (5) using small-group instruction, (6) asking questions/requiring frequent responses, (7) modeling, and (8) requiring students to do homework. In addition, Swanson found that cueing strategy use was an important instructional element.

Finally, several reviews of published intervention research focusing on the effectiveness of computer-assisted instruction (CAI) programs designed to teach academic skills to students with learning disabilities revealed similar findings. In addition to assessing the effectiveness of various CAI programss, the authors (Hall, Hughes, & Filbert, 2000; Hughes & Maccini, 1997; Maccini, Gagnon, & Hughes, 2002) analyzed instructional design and delivery features embedded in effective CAI programs. Again, instructional components included error correction procedures with elaborated and corrective feedback, teaching in small steps, clear demonstrations, prompted practice, use of wide ranges of examples and non-examples, and cumulative reviews and practice.

Recent Government Reports: General and Special Education

Three recent reports sponsored by the U.S. Department of Education have also identified explicit instruction as a well-supported instructional approach. In 2008, the National Mathematics Advisory Panel reported that explicit instruction has consistently shown positive effects on the math performance of students with mathematical difficulties, in the areas of both computation and problem solving. That same year, the Institute of Education Sciences published a report on improving adolescent literacy (Kamil et al., 2008), in which instructional methods were evaluated based on their level of evidence (e.g., strong, moderate, low), and this evaluation was used to make specific recommendations. The two recommendations that had the strongest level of evidence supporting their use were providing explicit vocabulary instruction and providing direct and explicit comprehension strategy instruction. The next year, a similar report (Gersten et al., 2009) was published identifying recommendations and the level of evidence supporting them in the area of teaching math skills to struggling elementary and middle school students. Again, the level of evidence for explicit instruction (e.g., modeling, guided practice, corrective feedback, and cumulative review) was rated as strong. It is important to point out that none of these reports stated that explicit instruction was the only way to teach. However, the conclusions were clear: Explicit instruction should be a consistent mainstay of working with students both with and without learning difficulties.

Comment on the Research

This section is not intended to be an exhaustive or detailed review of research supporting an explicit approach to teaching. However, it should be clear that such research does exist, has accumulated over decades, and comes from diverse types and areas of research. Despite ample supporting evidence, concerns about this form of instruction exist, and we would be remiss not to include some discussion of these issues.

RESPONSE TO POSSIBLE CONCERNS ABOUT EXPLICIT INSTRUCTION

We believe that a direct and explicit methodology is helpful to all students learning new skills and content, and is absolutely essential for struggling or disadvantaged learners. Nevertheless, it is important to address some of the more frequently voiced criticisms and concerns about aspects of explicit instruction. Fundamental issues about how to teach and how students learn have been debated for more than a century, and we don't believe we will settle the issues here. Having said this, we now discuss some criticisms related to explicit instruction, many of which are explored in other documents (e.g., Heward, 2003).

Guided versus Unguided Instruction

Terminology aside, perhaps the most basic question in education is this: "What is the best way to teach students?" First, we believe that there is no one best way to teach. Instruction should be based on students' needs and guided by research rather than by a personal philosophy. With that said, the debate about instruction hinges primarily on how students learn and on what degree of structure and support they need to acquire important skills and knowledge. In some ways, instructional approaches can be put on a continuum of how much guidance and scaffolding are considered desirable in teaching new skills to novice learners (in terms of their knowledge about what is being taught) or intermediate learners. Explicit instruction can be placed at one end of this continuum, and constructivist or discovery approaches can be placed at the other end. In explicit instruction, scaffolding includes logical structuring of curricula (e.g., sequencing, segmenting), explaining fully what is to be learned, and providing the necessary supports and prompts as students begin to learn and apply new information. As noted earlier, approaches at the other end of this continuum are characterized by minimal teacher guidance and structure as students discover or construct essential information (Kirschner, Sweller, & Clark, 2006; Sweller, Kirschner, & Clark, 2007).

Kirschner and colleagues approach the issue of how much explicit guidance is needed for novice and intermediate learners to acquire knowledge and skills by presenting information about what is currently known regarding human cognition and learning, specifically in the areas of working and long-term memory. The results of research in this area indicate that expert problem solvers derive their ability and skills by drawing on their long-term memory of a topic. They know a *lot* about the topic; they can draw upon this knowledge and use it as they learn to solve problems, and thus are better able to "discover" solutions with minimal guidance or support. By contrast, novice or intermediate learners do not have similar stores of knowledge to draw on, and so they are much less able to learn new information and solve problems. The well-documented limitations of working memory—the length of time new, incoming information can be stored (30 seconds or less), as well as its capacity (5–7 "bits" of information)—during problem solving have deleterious effects for novice learners. Because they lack ready access to a well-developed and connected knowledge base in long-term memory, they are left with trying to take in and manipulate complex and novel information within the limited capacity of their short-term memory. For example, if a novice learner is given a problem to solve and is expected to examine the problem and discover a solution, but lacks an extensive, well-connected knowledge base on the topic, the limited capacities of working memory will result in so-called "cognitive overload."

This overload hinders efficient learning, often results in errors, and ends in frustration. However, if novice and intermediate learners are given guidance through supports such as clear models or worked examples, the tax on working memory is significantly reduced; the more information and guidance provided, the less the working memory load, and this lessening allows students to focus on what is to be learned. If on the other hand, students do have a well-connected store of knowledge on the topic, a less structured and guided approach may be effective, given the unlimited capacity of long-term memory to be used during problem solving. It is interesting however, that Kirschner and his colleagues report that even for students with prior knowledge, high levels of guidance are as effective as unguided instruction.

Student-Centered versus Teacher-Centered Teaching

Proponents of constructivist approaches to teaching (e.g., problem-based learning, discovery learning) have created a false dichotomy by labeling explicit methods as "teacher-centered" and constructivist approaches as "student-centered." The implication of these labels is that one approach is more concerned about students than the other. Proponents of constructivist approaches (e.g., Poplin, 1988; Steffe & Gale, 1995; Stainback & Stainback, 1992) contend that students should construct or discover knowledge themselves via exposure to information-rich environments, and that the teacher's primary role should be guiding students as they construct their own knowledge in response to experiential activities, rather than actively role structuring curricula and presenting content to students.

We believe that using the labels "teacher-centered" and "student-centered" to characterize these instructional approaches is misleading and is the result of constructivism proponents' efforts to cast their methodologies in a positive light (e.g., "Our approach is about the student") and explicit instruction methods in a less favorable light (e.g., "their approach is about what the teacher wants"). Such is not the case. Proponents of explicit instruction are equally focused on students. They understand, however, that many students struggle with learning when necessary guidance and support are not provided. We contend that appropriate use of explicit elements of instruction is indeed "student-centered," in that it incorporates what we know about how students learn new material and about the skills they need in order to be successful. In addition, if one looks closely at the applications of explicit instruction elements in the remaining chapters of this book, it should be apparent that all instructional decisions are based entirely on student needs and performance, rather than on a rigid adherence to "teacher-centered" techniques.

Decontextualized versus Contextualized Instruction

As described earlier, one element of explicit instruction is teaching specific and discrete skills and/or subskills. Concerns related to this element include the notions that teaching discrete skills trivializes education, that a "reductionist" approach (i.e., explicit teaching of skills) ignores the whole child, and that processes such as reading are greater than the sum of their isolated parts (e.g., subskills of reading such as phonemic awareness or decoding) (Heward, 2003). To address these concerns, we note first that in addition to the research supporting the effectiveness of explicit instruction, results reported by the National Reading Panel (2000) indicate that teaching phonemic awareness and phonics (to name a few subskills) does have a positive impact on students' overall reading ability (being able to read words in print accurately and fluently, as well as demonstrating comprehension). Second, we believe that teaching the discrete skills constituting an overall skill does have this potential pitfall—*if* the skills or subskills are not linked whenever possible to the overall skill. For example, teaching punctuation skills or sentence-building strategies in isolation, without providing opportunities to use these skills in the context of the overall writing process, would be likely to result in the so-called "splinter skill" phenomenon (whereby students do not generalize what they are learning).

Thus, while we acknowledge the *potential* for isolated skill instruction to result in students' inability to apply or generalize these skills to an overall skill set, we emphasize that this can be avoided by making sure students understand how the pieces (i.e., skills) fit and by bringing the pieces together through contextualized practice and expanded instruction. This helps students begin to broaden their understanding and application of skills in less guided and more exploratory activities.

Drill and Practice versus "Drill and Kill"

As noted several times in this chapter, providing numerous practice attempts for students as they learn new skills is a key element of explicit instruction and consistently appears as an important element in teaching students with learning difficulties (e.g., Swanson & Sachse-Lee, 2000). Because drill and practice are integral to learning, we devote an entire chapter of this book to guidelines for providing effective practice. Although we believe that judicious practice is critical for students to commit useful facts, rules, concepts and strategies to memory in order to use them fluently (i.e., accurately, fluidly, and with little thought), some educators (e.g., Kohn, 1998) have raised concerns about the use of drill and practice as learning tools. Among these concerns are that practice (via seatwork and homework) dulls creativity; indeed, practice for committing skills and facts to memory has been dubbed "drill and kill." Part of this contention appears to be based on the assumption that repeatedly practicing skills dulls the mind and does not lead to higher-order thinking or creativity. Instead, students should be given more enjoyable problems to solve on their own, whereby they construct their own knowledge. Through such activities, it is believed, students will become fluent and automatic on their own.

We have found no research to back up this contention, although we agree with Heward (2003) that regular drill and practice can be "conducted in ways that render it pointless, a waste of time, and frustrating for children" (p. 191). However, when used appropriately, routine practice is an extremely powerful instructional tool that not only helps students learn and retain basic skills and facts in a fluent fashion, but has positive outcomes when students attempt higher-order strategies. As Heward points out, the ability to use basic skills in reading or math without having to stop and think about them allows students to allot more of their attention to solving more complex tasks. For example, if students are not fluent in basic math facts, their ability to solve complex math problems will be hindered: They must use their working memory to remember basic math facts, and thus will have less attention to focus on the problem-solving aspect of the task. Similarly, the positive relationship between reading words fluently (which comes from repeated practice and exposure to words) and comprehending what is read has been clearly documented (Chard, Vaughn, & Tyler, 2002; Kubina & Hughes, 2008). It appears that the adage "drill and kill" would be more appropriately stated as "drill and skill" or even "drill and thrill."

CHAPTER SUMMARY AND A FINAL CASE STUDY

This chapter has several purposes: (1) to define explicit instruction; (2) to describe 16 *elements* that work together to make instruction organized, transparent, and responsive to students' learning needs; (3) to address the underlying *principles* associated with achievement, such as the importance of optimizing academic learning time, level of success, and content coverage; and (4) to summarize decades of research that supports the use of these elements for teaching a range of students including those with learning difficulties, arriving at the same conclusion: Many students need explicit instruction in order to learn and apply academic skills.

In addition to providing a foundation for the remaining chapters, this chapter has been designed to undergird a story—a story of an effective teacher using the elements and principles of explicit instruction to maximize student achievement. Mr. Davidson is one such teacher.

Mr. Davidson teaches general math to a group of 25 seventh graders, including 3 special education students. Before the present semester began, Mr. Davidson examined the math book adopted by his school district and determined those skills that would be emphasized and others that would be deleted or deemphasized; he also examined the prerequisites skills for each skill, strategy, or concept. In addition, Mr. Davidson identified a number of strategies that needed to be broken into smaller steps to ensure his students' success.

Knowing that time is of the essence, Mr. Davidson decided to use the following plan for daily lessons. To reinforce the use of the plan, Mr. Davidson designed a parallel lesson-planning form and displayed a poster with the plan in his classroom.

1. Have students complete five review items as a warm-up activity.
2. Review any additional prerequisites for the skill/strategy to be taught.
3. Establish the goal and relevance of today's lesson.
4. Model the new skill/strategy.
5. Provide guided practice with the new skill/strategy.
6. Introduce independent practice with the skill/strategy.
7. Provide small-group instruction to struggling students as needed.
8. Review the focus skill at the end of the period and assign homework.

To observe Mr. Davidson is to see a master teacher in action: His explanations are clear; his pace brisk; his monitoring continuous; his feedback positive, corrective, and immediate. Throughout the lesson, he constantly elicits responses: Students say answers together, share answers with their partners, solve problems on whiteboards and paper, and draw diagrams to illustrate concepts and strategies. As students write responses or share with their partners, Mr. Davidson moves around the room examining written responses, listening to explanations, and otherwise connecting with the students. Smiles abound from students and teacher alike, and occasional laughter can be heard by others out in the hall. But most importantly, an examination of student responses indicates that *learning*, not just teaching, is occurring in this classroom.

In the next chapters, we discuss how the elements and principles of explicit instruction are translated into the design and delivery of academic lessons. As you will see, utilization of the 16 elements ensures that the principles of learning are addressed. For example, carefully structured lessons that include guided and supported practice result in higher levels of student success; teaching at a brisk pace allows more content to be covered; and eliciting increased numbers of student responses enhances student engagement.