

# Teaching Children with Attention Deficit Hyperactivity Disorder: Instructional Strategies and Practices

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## Introduction

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Inattention, hyperactivity, and impulsivity are the core symptoms of Attention Deficit Hyperactivity Disorder (ADHD). A child's academic success is often dependent on his or her ability to attend to tasks and teacher and classroom expectations with minimal distraction. Such skill enables a student to acquire necessary information, complete assignments, and participate in classroom activities and discussions (Forness & Kavale, 2001). When a child exhibits behaviors associated with ADHD, consequences may include difficulties with academics and with forming relationships with his or her peers if appropriate instructional methodologies and interventions are not implemented.

## Identifying children with ADHD

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There are an estimated 1.46 to 2.46 million children with ADHD in the United States ; together these children constitute 3–5 percent of the student population (Stevens, 1997; American Psychiatric Association, 1994). More boys than girls are diagnosed with ADHD; most research suggests that the condition is diagnosed four to nine times more often in boys than in girls (Bender, 1997; Hallowell, 1994; Rief, 1997). Although for years it was assumed to be a childhood disorder that became visible as early as age 3 and then disappeared with the advent of adolescence, the condition is not limited to children. It is now known that while the symptoms of the disorders may change as a child ages, many children with ADHD do not grow out of it (Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998).

The behaviors associated with ADHD change as children grow older. For example, a preschool child may show gross motor overactivity — always running or climbing and frequently shifting from one activity to another. Older children may be restless and fidget in their seats or play with their chairs and desks. They frequently fail to finish their schoolwork, or they work carelessly. Adolescents with ADHD tend to be more withdrawn and less communicative. They are often impulsive, reacting spontaneously without regard to previous plans or necessary tasks and homework.

According to the fourth edition of the *Diagnostic Statistical Manual of Mental Disorders (DSM-IV)* of the American Psychiatric Association, ADHD can be defined by behaviors exhibited. Individuals with ADHD exhibit combinations of the following behaviors:

- Fidgeting with hands or feet or squirming in their seat (adolescents with ADHD may appear restless);
- Difficulty remaining seated when required to do so;
- Difficulty sustaining attention and waiting for a turn in tasks, games, or group situations;
- Blurting out answers to questions before the questions have been completed;
- Difficulty following through on instructions and in organizing tasks;
- Shifting from one unfinished activity to another;
- Failing to give close attention to details and avoiding careless mistakes;
- Losing things necessary for tasks or activities;
- Difficulty in listening to others without being distracted or interrupting;
- Wide ranges in mood swings; and
- Great difficulty in delaying gratification.

Children with ADHD show different combinations of these behaviors and typically exhibit behavior that is classified into two main categories: poor sustained attention and hyperactivity-impulsiveness. Three subtypes of the disorder have been described in the *DSM-IV*: predominantly inattentive, predominantly hyperactive-impulsive, and combined types (American Psychiatric Association [APA] as cited in Barkley, 1997). For instance, children with ADHD, without hyperactivity and impulsivity, do not show excessive activity or fidgeting but instead may daydream, act lethargic or restless, and frequently do not finish their academic work. Not all of

these behaviors appear in all situations. A child with ADHD may be able to focus when he or she is receiving frequent reinforcement or is under very strict control. The ability to focus is also common in new settings or while interacting one-on-one. While other children may occasionally show some signs of these behaviors, in children with ADHD the symptoms are more frequent and more severe than in other children of the same age.

Although many children have only ADHD, others have additional academic or behavioral diagnoses. For instance, it has been documented that approximately a quarter to one-third of all children with ADHD also have learning disabilities (Forness & Kavale, 2001; Robelia, 1997; Schiller, 1996), with studies finding populations where the comorbidity ranges from 7 to 92 percent (DuPaul & Stoner, 1994; Osman, 2000). Likewise, children with ADHD have coexisting psychiatric disorders at a much higher rate. Across studies, the rate of conduct or oppositional defiant disorders varied from 43 to 93 percent and anxiety or mood disorders from 13 to 51 percent (Burt, Krueger, McGue, & Iacono, 2001; Forness, Kavale, & San Miguel, 1998; Jensen, Martin, & Cantwell, 1997; Jensen, Shertvete, Zenakis, & Ritchens, 1993). National data on children who receive special education confirm this co-morbidity with other identified disabilities. Among parents of children age 6–13 years who have an emotional disturbance, 65 percent report their children also have ADHD. Parents of 28 percent of children with learning disabilities report their children also have ADHD (Wagner & Blackorby, 2002).

When selecting and implementing successful instructional strategies and practices, it is imperative to understand the characteristics of the child, including those pertaining to disabilities or diagnoses. This knowledge will be useful in the evaluation and implementation of successful practices, which are often the same practices that benefit students without ADHD.

## **An overall strategy for the successful instruction of children with ADHD**

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Teachers who are successful in educating children with ADHD use a three-pronged strategy. They begin by identifying the unique needs of the child. For example, the teacher determines how, when, and why the child is inattentive, impulsive, and hyperactive. The teacher then selects different educational practices associated with academic instruction, behavioral interventions, and classroom accommodations that are appropriate to meet that child's needs. Finally, the teacher combines these practices into an individualized educational program (IEP) or other individualized plan and integrates this program with educational activities provided to other children in the class. The three-pronged strategy, in summary, is as follows:

- **Evaluate the child's individual needs and strengths.**  
Assess the unique educational needs and strengths of a child with ADHD in the class. Working with a multidisciplinary team and the child's parents, consider both academic and behavioral needs, using formal diagnostic assessments and informal classroom observations. Assessments, such as learning style inventories, can be used to determine children's strengths and enable instruction to build on their existing abilities. The settings and contexts in which challenging behaviors occur should be considered in the evaluation.
- **Select appropriate instructional practices.**  
Determine which instructional practices will meet the academic and behavioral needs identified for the child. Select practices that fit the content, are age appropriate, and gain the attention of the child.
- **For children receiving special education services, integrate appropriate practices within an IEP.**  
In consultation with other educators and parents, an IEP should be created to reflect annual

goals and the special education-related services, along with supplementary aids and services necessary for attaining those goals. Plan how to integrate the educational activities provided to other children in your class with those selected for the child with ADHD.

Because no two children with ADHD are alike, it is important to keep in mind that no single educational program, practice, or setting will be best for all children.

## **How to implement the strategy: Three components of successful programs for children with ADHD**

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Successful programs for children with ADHD integrate the following three components:

- Academic Instruction;
- Behavioral Interventions; and
- Classroom Accommodations.

The remainder of this document describes how to integrate a program using these three components and provides suggestions for practices that can help children with ADHD in a classroom setting. It should be emphasized that many of the techniques suggested have the additional benefit of enhancing the learning of other children in the classroom who *do not* have ADHD. In addition, while they have been used most widely with children at the elementary level, the following practices are useful for older students as well.

### **Academic instruction**

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The first major component of the most effective instruction for children with ADHD is effective academic instruction. Teachers can help prepare their students with ADHD to achieve by applying the principles of effective teaching when they introduce, conduct, and conclude each lesson. The discussion and techniques that follow pertain to the instructional process in general (across subject areas); strategies for specific subject areas appear in the subsequent subsection "Individualizing Instructional Practices."

#### **Introducing lessons**

Students with ADHD learn best with a carefully structured academic lesson — one where the teacher explains what he or she wants children to learn in the current lesson and places these skills and knowledge in the context of previous lessons. Effective teachers preview their expectations about what students will learn and how they should behave during the lesson. A number of teaching-related practices have been found especially useful in facilitating this process:

- **Provide an advance organizer.**  
Prepare students for the day's lesson by quickly summarizing the order of various activities planned. Explain, for example, that a review of the previous lesson will be followed by new information and that both group and independent work will be expected.

- **Review previous lessons.**

Review information about previous lessons on this topic. For example, remind children that yesterday's lesson focused on learning how to regroup in subtraction. Review several problems before describing the current lesson.

- **Set learning expectations.**

State what students are expected to learn during the lesson. For example, explain to students that a language arts lesson will involve reading a story about Paul Bunyan and identifying new vocabulary words in the story.

- **Set behavioral expectations.**

Describe how students are expected to behave during the lesson. For example, tell children that they may talk quietly to their neighbors as they do their seatwork or they may raise their hands to get your attention.

- **State needed materials.**

Identify all materials that the children will need during the lesson, rather than leaving them to figure out on their own the materials required. For example, specify that children need their journals and pencils for journal writing or their crayons, scissors, and colored paper for an art project.

- **Explain additional resources.**

Tell students how to obtain help in mastering the lesson. For example, refer children to a particular page in the textbook for guidance on completing a worksheet.

- **Simplify instructions, choices, and scheduling.**

The simpler the expectations communicated to an ADHD student, the more likely it is that he or she will comprehend and complete them in a timely and productive manner.

## **Conducting lessons**

In order to conduct the most productive lessons for children with ADHD, effective teachers periodically question children's understanding of the material, probe for correct answers before calling on other students, and identify which students need additional assistance. Teachers should keep in mind that transitions from one lesson or class to another are particularly difficult for students with ADHD. When they are prepared for transitions, these children are more likely to respond and to stay on task. The following set of strategies may assist teachers in conducting effective lessons:

- **Be predictable.**

Structure and consistency are very important for children with ADHD; many do not deal well with change. Minimal rules and minimal choices are best for these children. They need to understand clearly what is expected of them, as well as the consequences for not adhering to expectations.

- **Support the student's participation in the classroom.**  
Provide students with ADHD with private, discreet cues to stay on task and advance warning that they will be called upon shortly. Avoid bringing attention to differences between ADHD students and their classmates. At all times, avoid the use of sarcasm and criticism.
- **Use audiovisual materials.**  
Use a variety of audiovisual materials to present academic lessons. For example, use an overhead projector to demonstrate how to solve an addition problem requiring regrouping. The students can work on the problem at their desks while you manipulate counters on the projector screen.
- **Check student performance.**  
Question individual students to assess their mastery of the lesson. For example, you can ask students doing seatwork (i.e., lessons completed by students at their desks in the classroom) to demonstrate how they arrived at the answer to a problem, or you can ask individual students to state, in their own words, how the main character felt at the end of the story.
- **Ask probing questions.**  
Probe for the correct answer after allowing a child sufficient time to work out the answer to a question. Count at least 15 seconds before giving the answer or calling on another student. Ask followup questions that give children an opportunity to demonstrate what they know.
- **Perform ongoing student evaluation.**  
Identify students who need additional assistance. Watch for signs of lack of comprehension, such as daydreaming or visual or verbal indications of frustration. Provide these children with extra explanations, or ask another student to serve as a peer tutor for the lesson.
- **Help students correct their own mistakes.**  
Describe how students can identify and correct their own mistakes. For example, remind students that they should check their calculations in math problems and reiterate how they can check their calculations; remind students of particularly difficult spelling rules and how students can watch out for easy-to-make errors.
- **Help students focus.**  
Remind students to keep working and to focus on their assigned task. For example, you can provide follow-up directions or assign learning partners. These practices can be directed at individual children or at the entire class.
- **Follow-up directions.**  
Effective teachers of children with ADHD also guide them with follow-up directions:

- **Oral directions.**  
After giving directions to the class as a whole, provide additional oral directions for a child with ADHD. For example, ask the child if he or she understood the directions and repeat the directions together.
- **Written directions.**  
Provide follow-up directions in writing. For example, write the page number for an assignment on the chalkboard and remind the child to look at the chalkboard if he or she forgets the assignment.
- **Lower noise level.**  
Monitor the noise level in the classroom, and provide corrective feedback, as needed. If the noise level exceeds the level appropriate for the type of lesson, remind all students — or individual students — about the behavioral rules stated at the beginning of the lesson.
- **Divide work into smaller units.**  
Break down assignments into smaller, less complex tasks. For example, allow students to complete five math problems before presenting them with the remaining five problems.
- **Highlight key points.**  
Highlight key words in the instructions on worksheets to help the child with ADHD focus on the directions. Prepare the worksheet before the lesson begins, or underline key words as you and the child read the directions together. When reading, show children how to identify and highlight a key sentence, or have them write it on a separate piece of paper, before asking for a summary of the entire book. In math, show children how to underline the important facts and operations; in “Mary has two apples, and John has three,” underline “two,” “and,” and “three.”
- **Eliminate or reduce frequency of timed tests.**  
Tests that are timed may not allow children with ADHD to demonstrate what they truly know due to their potential preoccupation with elapsed time. Allow students with ADHD more time to complete quizzes and tests in order to eliminate “test anxiety,” and provide them with other opportunities, methods, or test formats to demonstrate their knowledge.
- **Use cooperative learning strategies.**  
Have students work together in small groups to maximize their own and each other's learning. Use strategies such as Think-Pair-Share where teachers ask students to think about a topic, pair with a partner to discuss it, and share ideas with the group. (Slavin, 2002).
- **Use assistive technology.**  
All students, and those with ADHD in particular, can benefit from the use of technology (such as

computers and projector screens), which makes instruction more visual and allows students to participate actively.

## Concluding lessons

Effective teachers conclude their lessons by providing advance warning that the lesson is about to end, checking the completed assignments of at least some of the students with ADHD, and instructing students how to begin preparing for the next activity.

- **Provide advance warnings.**

Provide advance warning that a lesson is about to end. Announce 5 or 10 minutes before the end of the lesson (particularly for seatwork and group projects) how much time remains. You may also want to tell students at the beginning of the lesson how much time they will have to complete it.

- **Check assignments.**

Check completed assignments for at least some students. Review what they have learned during the lesson to get a sense of how ready the class was for the lesson and how to plan the next lesson.

- **Preview the next lesson.**

Instruct students on how to begin preparing for the next lesson. For example, inform children that they need to put away their textbooks and come to the front of the room for a large-group spelling lesson.

## Individualizing instructional practices

In addition to the general strategies listed above for introducing, conducting, and concluding their lessons, effective teachers of students with ADHD also individualize their instructional practices in accordance with different academic subjects and the needs of their students within each area. This is because children with ADHD have different ways of learning and retaining information, not all of which involve traditional reading and listening. Effective teachers first identify areas in which each child requires extra assistance and then use special strategies to provide structured opportunities for the child to review and master an academic lesson that was previously presented to the entire class. Strategies that may help facilitate this goal include the following (grouped by subject area):

## Language Arts and Reading Comprehension

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To help children with ADHD who are poor readers improve their reading comprehension skills, try the following instructional practices:

- **Silent reading time.** Establish a fixed time each day for silent reading (e.g., D.E.A.R.: Drop Everything and Read and Sustained Silent Reading).

- **Follow-along reading.** Ask the child to read a story silently while listening to other students or the teacher read the story aloud to the entire class.
- **Partner reading activities.** Pair the child with ADHD with another student partner who is a strong reader. The partners take turns reading orally and listening to each other.
- **Storyboards.** Ask the child to make storyboards that illustrate the sequence of main events in a story.
- **Storytelling.** Schedule storytelling sessions where the child can retell a story that he or she has read recently.
- **Playacting.** Schedule playacting sessions where the child can role-play different characters in a favorite story.
- **Word bank.** Keep a word bank or dictionary of new or “hard-to-read” sight-vocabulary words.
- **Board games for reading comprehension.** Play board games that provide practice with target reading-comprehension skills or sight-vocabulary words.
- **Computer games for reading comprehension.** Schedule computer time for the child to have drill-and-practice with sight vocabulary words.
- **Recorded books.** These materials, available from many libraries, can stimulate interest in traditional reading and can be used to reinforce and complement reading lessons.
- **“Backup” materials for home use.** Make available to students a second set of books and materials that they can use at home.
- **Summary materials.** Allow and encourage students to use published book summaries, synopses, and digests of major reading assignments to review (not replace) reading assignments.

## Phonics

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To help children with ADHD master rules of phonics, the following are effective:

- **Mnemonics for phonics.** Teach the child mnemonics that provide reminders about hard-to-learn phonics rules (e.g., “when two vowels go walking, the first does the talking”) (Scruggs & Mastropieri, 2000).
- **Word families.** Teach the child to recognize and read word families that illustrate particular phonetic concepts (e.g., “ph” sounds, “at-bat-cat”).

- **Board games for phonics.** Have students play board games, such as bingo, that allow them to practice phonetically irregular words.
- **Computer games for phonics.** Use a computer to provide opportunities for students to drill and practice with phonics or grammar lessons.
- **Picture-letter charts.** Use these for children who know sounds but do not know the letters that go with them.

## Writing

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In composing stories or other writing assignments, children with ADHD benefit from the following practices:

- **Standards for writing assignments.** Identify and teach the child classroom standards for acceptable written work, such as format and style.
- **Recognizing parts of a story.** Teach the student how to describe the major parts of a story (e.g., plot, main characters, setting, conflict, and resolution). Use a storyboard with parts listed for this purpose.
- **Post office.** Establish a post office in the classroom, and provide students with opportunities to write, mail, and receive letters to and from their classmates and teacher.
- **Visualize compositions.** Ask the child to close his or her eyes and visualize a paragraph that the teacher reads aloud. Another variation of this technique is to ask a student to describe a recent event while the other students close their eyes and visualize what is being said as a written paragraph.
- **Proofread compositions.** Require that the child proofread his or her work before turning in written assignments. Provide the child with a list of items to check when proofreading his or her own work.
- **Tape recorders.** Ask the student to dictate writing assignments into a tape recorder, as an alternative to writing them.
- **Dictate writing assignments.** Have the teacher or another student write down a story told by a child with ADHD.

## Spelling

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To help children with ADHD who are poor spellers, the following techniques have been found to be helpful:

- **Everyday examples of hard-to-spell words.** Take advantage of everyday events to teach difficult spelling words in context. For example, ask a child eating a cheese sandwich to spell “sandwich.”
- **Frequently used words.** Assign spelling words that the child routinely uses in his or her speech each day.
- **Dictionary of misspelled words.** Ask the child to keep a personal dictionary of frequently misspelled words.
- **Partner spelling activities.** Pair the child with another student. Ask the partners to quiz each other on the spelling of new words. Encourage both students to guess the correct spelling.
- **Manipulatives.** Use cutout letters or other manipulatives to spell out hard-to-learn words.
- **Color-coded letters.** Color code different letters in hard-to-spell words (e.g., “receipt”).
- **Movement activities.** Combine movement activities with spelling lessons (e.g., jump rope while spelling words out loud).
- **Word banks.** Use 3" x 5" index cards of frequently misspelled words sorted alphabetically.

## Handwriting

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Students with ADHD who have difficulty with manuscript or cursive writing may well benefit from their teacher's use of the following instructional practices:

- **Individual chalkboards.** Ask the child to practice copying and erasing the target words on a small, individual chalkboard. Two children can be paired to practice their target words together.
- **Quiet places for handwriting.** Provide the child with a special “quiet place” (e.g., a table outside the classroom) to complete his or her handwriting assignments.
- **Spacing words on a page.** Teach the child to use his or her finger to measure how much space to leave between each word in a written assignment.
- **Special writing paper.** Ask the child to use special paper with vertical lines to learn to space letters and words on a page.
- **Structured programs for handwriting.** Teach handwriting skills through a structured program, such as Jan Olsen's Handwriting Without Tears program (Olsen, 2003).

## Math computation

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Numerous individualized instructional practices can help children with ADHD improve their basic computation skills. The following are just a few:

- **Patterns in math.** Teach the student to recognize patterns when adding, subtracting, multiplying, or dividing whole numbers. (e.g., the digits of numbers which are multiples of 9 [18, 27, 36 . . . ] add up to 9).
- **Partnering for math activities.** Pair a child with ADHD with another student and provide opportunities for the partners to quiz each other about basic computation skills.
- **Mastery of math symbols.** If children do not understand the symbols used in math, they will not be able to do the work. For instance, do they understand that the “plus” in  $1 + 3$  means to add and that the “minus” in  $5 - 3$  means to take away?
- **Mnemonics for basic computation.** Teach the child mnemonics that describe basic steps in computing whole numbers. For example, “Don't Miss Susie's Boat” can be used to help the student recall the basic steps in long division (i.e., divide, multiply, subtract, and bring down).
- **Real-life examples of money skills.** Provide the child with real-life opportunities to practice target money skills. For example, ask the child to calculate his or her change when paying for lunch in the school cafeteria, or set up a class store where children can practice calculating change.
- **Color coding arithmetic symbols.** Color code basic arithmetic symbols, such as  $+$ ,  $-$ , and  $=$ , to provide visual cues for children when they are computing whole numbers.
- **Calculators to check basic computation.** Ask the child to use a calculator to check addition, subtraction, multiplication, or division.
- **Board games for basic computation.** Ask the child to play board games to practice adding, subtracting, multiplying, and dividing whole numbers.
- **Computer games for basic computation.** Schedule computer time for the child to drill and practice basic computations, using appropriate games.
- **“Magic minute” drills.** Have students perform a quick (60-second) drill every day to practice basic computation of math facts, and have children track their own performance.

## Solving math word problems

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To help children with ADHD improve their skill in solving word problems in mathematics, try the following:

- **Reread the problem.** Teach the child to read a word problem *two times* before beginning to compute the answer.

- **Clue words.** Teach the child clue words that identify which operation to use when solving word problems. For example, words such as “sum,” “total,” or “all together” may indicate an addition operation.
- **Guiding questions for word problems.** Teach students to ask guiding questions in solving word problems. For example: What is the question asked in the problem? What information do you need to figure out the answer? What operation should you use to compute the answer?
- **Real-life examples of word problems.** Ask the student to create and solve word problems that provide practice with specific target operations, such as addition, subtraction, multiplication, or division. These problems can be based on recent, real-life events in the child's life.
- **Calculators to check word problems.** Ask the student to use a calculator to check computations made in answering assigned word problems.

## Use of special materials in math

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Some children with ADHD benefit from using special materials to help them complete their math assignments, including:

- **Number lines.** Provide number lines for the child to use when computing whole numbers.
- **Manipulatives.** Use manipulatives to help students gain basic computation skills, such as counting poker chips when adding single-digit numbers.
- **Graph paper.** Ask the child to use graph paper to help organize columns when adding, subtracting, multiplying, or dividing whole numbers.

## Organizational and study skills useful for academic instruction of children with ADHD

Many students with ADHD are easily distracted and have difficulty focusing their attention on assigned tasks. However, the following practices can help children with ADHD improve their organization of homework and other daily assignments:

- **Designate one teacher as the student's advisor or coordinator.** This teacher will regularly review the student's progress through progress reports submitted by other teachers and will act as the liaison between home and school. Permit the student to meet with this advisor on a regular basis (e.g., Monday morning) to plan and organize for the week and to review progress and problems from the past week.
- **Assignment notebooks.** Provide the child with an assignment notebook to help organize homework and other seatwork.

- **Color-coded folders.** Provide the child with color-coded folders to help organize assignments for different academic subjects (e.g., reading, mathematics, social science, and science).
- **Work with a homework partner.** Assign the child a partner to help record homework and other seatwork in the assignment notebook and file work sheets and other papers in the proper folders.
- **Clean out desks and book bags.** Ask the child to periodically sort through and clean out his or her desk, book bag, and other special places where written assignments are stored.
- **Visual aids as reminders of subject material.** Use banners, charts, lists, pie graphs, and diagrams situated throughout the classroom to remind students of the subject material being learned.

## Assisting students with ADHD with time management

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Children with ADHD often have difficulty finishing their assignments on time and can thus benefit from special materials and practices that help them to improve their time management skills, including:

- **Use a clock or wristwatch.** Teach the child how to read and use a clock or wristwatch to manage time when completing assigned work.
- **Use a calendar.** Teach the child how to read and use a calendar to schedule assignments.
- **Practice sequencing activities.** Provide the child with supervised opportunities to break down a long assignment into a sequence of short, interrelated activities.
- **Create a daily activity schedule.** Tape a schedule of planned daily activities to the child's desk.

## Helpful study skills for students with ADHD

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Children with ADHD often have difficulty in learning how to study effectively on their own. The following strategies may assist ADHD students in developing the study skills necessary for academic success:

- **Adapt worksheets.** Teach a child how to adapt instructional worksheets. For example, help a child fold his or her reading worksheet to reveal only one question at a time. The child can also use a blank piece of paper to cover the other questions on the page.
- **Venn diagrams.** Teach a child how to use Venn diagrams to help illustrate and organize key concepts in reading, mathematics, or other academic subjects.

- **Note-taking skills.** Teach a child with ADHD how to take notes when organizing key academic concepts that he or she has learned, perhaps with the use of a program such as Anita Archer's Skills for School Success (Archer & Gleason, 2002).
- **Checklist of frequent mistakes.** Provide the child with a checklist of mistakes that he or she frequently makes in written assignments (e.g., punctuation or capitalization errors), mathematics (e.g., addition or subtraction errors), or other academic subjects. Teach the child how to use this list when proofreading his or her work at home and school.
- **Checklist of homework supplies.** Provide the child with a checklist that identifies categories of items needed for homework assignments (e.g., books, pencils, and homework assignment sheets).
- **Uncluttered workspace.** Teach a child with ADHD how to prepare an uncluttered workspace to complete assignments. For example, instruct the child to clear away unnecessary books or other materials *before* beginning his or her seatwork.
- **Monitor homework assignments.** Keep track of how well your students with ADHD complete their assigned homework. Discuss and resolve with them and their parents any problems in completing these assignments. For example, evaluate the difficulty of the assignments and how long the children spend on their homework each night. Keep in mind that the *quality*, rather than the *quantity*, of homework assigned is the most important issue. While doing homework is an important part of developing study skills, it should be used to reinforce skills and to review material learned in class, rather than to present, in advance, large amounts of material that is new to the student.

## Behavioral interventions

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The second major component of effective instruction for children with ADHD involves the use of *behavioral interventions*. Exhibiting behavior that resembles that of younger children, children with ADHD often act immaturely and have difficulty learning how to control their impulsiveness and hyperactivity. They may have problems forming friendships with other children in the class and may have difficulty thinking through the social consequences of their actions.

The purpose of behavioral interventions is to assist students in displaying the behaviors that are most conducive to their own learning and that of classmates. Well-managed classrooms prevent many disciplinary problems and provide an environment that is most favorable for learning. When a teacher's time must be spent interacting with students whose behaviors are not focused on the lesson being presented, less time is available for assisting other students. Behavioral interventions should be viewed as an opportunity for teaching in the most effective and efficient manner, rather than as an opportunity for punishment.

## Effective behavioral intervention techniques

Effective teachers use a number of behavioral intervention techniques to help students learn how to control their behavior. Perhaps the most important and effective of these is **verbal reinforcement** of appropriate behavior. The most common form of verbal reinforcement is **praise** given to a student when he or she begins and completes an activity or exhibits a particular desired behavior. Simple phrases such as “good job” encourage a child to act appropriately. Effective teachers praise children with ADHD frequently and look for a behavior to praise before, and not after, a child gets off task. The following strategies provide some guidance regarding the use of praise:

- **Define the appropriate behavior while giving praise.** Praise should be specific for the positive behavior displayed by the student: The comments should focus on what the student did right and should include exactly what part(s) of the student's behavior was desirable. Rather than praising a student for not disturbing the class, for example, a teacher should praise him or her for quietly completing a math lesson on time.
- **Give praise immediately.** The sooner that approval is given regarding appropriate behavior, the more likely the student will repeat it.
- **Vary the statements given as praise.** The comments used by teachers to praise appropriate behavior should vary; when students hear the same praise statement repeated over and over, it may lose its value.
- **Be consistent and sincere with praise.** Appropriate behavior should receive consistent praise. Consistency among teachers with respect to desired behavior is important in order to avoid confusion on the part of students with ADHD. Similarly, students will notice when teachers give insincere praise, and this insincerity will make praise less effective.

It is important to keep in mind that the most effective teachers focus their behavioral intervention strategies on *praise* rather than on *punishment*. Negative consequences may temporarily change behavior, but they rarely change attitudes and may actually increase the frequency and intensity of inappropriate behavior by rewarding misbehaving students with attention. Moreover, punishment may only teach children what not to do; it does not provide children with the skills that they need to do what is expected. Positive reinforcement produces the changes in attitudes that will shape a student's behavior over the long term.

In addition to verbal reinforcement, the following set of generalized behavioral intervention techniques has proven helpful with students with ADHD as well:

- **Selectively ignore inappropriate behavior.** It is sometimes helpful for teachers to selectively ignore inappropriate behavior. This technique is particularly useful when the behavior is unintentional or unlikely to recur or is intended solely to gain the attention of teachers or classmates without disrupting the classroom or interfering with the learning of others.
- **Remove nuisance items.** Teachers often find that certain objects (such as rubber bands and toys) distract the attention of students with ADHD in the classroom. The removal of nuisance items is generally most effective after the student has been given the choice of putting it away immediately and then fails to do so.

- **Provide calming manipulatives.** While some toys and other objects can be distracting for both the students with ADHD and peers in the classroom, some children with ADHD can benefit from having access to objects that can be manipulated quietly. Manipulatives may help children gain some needed sensory input while still attending to the lesson.
- **Allow for “escape valve” outlets.** Permitting students with ADHD to leave class for a moment, perhaps on an errand (such as returning a book to the library), can be an effective means of settling them down and allowing them to return to the room ready to concentrate.
- **Activity reinforcement.** Students receive activity reinforcement when they are encouraged to perform a less desirable behavior before a preferred one.
- **Hurdle helping.** Teachers can offer encouragement, support, and assistance to prevent students from becoming frustrated with an assignment. This help can take many forms, from enlisting a peer for support to supplying additional materials or information.
- **Parent conferences.** Parents have a critical role in the education of students, and this axiom may be particularly true for those with ADHD. As such, parents must be included as partners in planning for the student's success. Partnering with parents entails including parental input in behavioral intervention strategies, maintaining frequent communication between parents and teachers, and collaborating in monitoring the student's progress.
- **Peer mediation.** Members of a student's peer group can positively impact the behavior of students with ADHD. Many schools now have formalized peer mediation programs, in which students receive training in order to manage disputes involving their classmates.

Effective teachers also use *behavioral prompts* with their students. These prompts help remind students about expectations for their learning and behavior in the classroom. Three, which may be particularly helpful, are the following:

- **Visual cues.** Establish simple, nonintrusive visual cues to remind the child to remain on task. For example, you can point at the child while looking him or her in the eye, or you can hold out your hand, palm down, near the child.
- **Proximity control.** When talking to a child, move to where the child is standing or sitting. Your physical proximity to the child will help the child to focus and pay attention to what you are saying.
- **Hand gestures.** Use hand signals to communicate privately with a child with ADHD. For example, ask the child to raise his or her hand every time you ask a question. A closed fist can signal that the child knows the answer; an open palm can signal that he or she does not know the answer. You would call on the child to answer only when he or she makes a fist.

In some instances, children with ADHD benefit from instruction designed to help students learn how to manage their own behavior:

- **Social skills classes.** Teach children with ADHD appropriate social skills using a structured class. For example, you can ask the children to role-play and model different solutions to common social problems. It is critical to provide for the generalization of these skills, including structured opportunities for the children to use the social skills that they learn. Offering such classes, or experiences, to the general school population can positively affect the school climate.
- **Problem solving sessions.** Discuss how to resolve social conflicts. Conduct impromptu discussions with one student or with a small group of students where the conflict arises. In this setting, ask two children who are arguing about a game to discuss how to settle their differences. Encourage the children to resolve their problem by talking to each other in a supervised setting.

For many children with ADHD, *functional behavioral assessments* and *positive behavioral interventions and supports*, including behavioral contracts and management plans, tangible rewards, or token economy systems, are helpful in teaching them how to manage their own behavior. Because students' individual needs are different, it is important for teachers, along with the family and other involved professionals, to evaluate whether these practices are appropriate for their classrooms. Examples of these techniques, along with steps to follow when using them, include the following:

- **Functional Behavioral Assessment (FBA).** FBA is a systematic process for describing problem behavior and identifying the environmental factors and surrounding events associated with problem behavior. The team that works closely with the child exhibiting problem behavior (1) observes the behavior and identifies and defines its problematic characteristics, (2) identifies which actions or events precede and follow the behavior, and (3) determines how often the behavior occurs. The results of the FBA should be used to develop an effective and efficient intervention and support plan. (Gable, et al., 1997)
- **Positive Behavioral Interventions and Supports (PBIS).** This method is an application of a behaviorally based systems approach that is grounded in research regarding behavior in the context of the settings in which it occurs. Using this method, schools, families, and communities work to design effective environments to improve behavior. The goal of PBIS is to eliminate problem behavior, to replace it with more appropriate behavior, and to increase a person's skills and opportunities for an enhanced quality of life (Todd, Horner, Sugai, & Sprague, 1999).
- **Behavioral contracts and management plans.** Identify specific academic or behavioral goals for the child with ADHD, along with behavior that needs to change and strategies for responding to inappropriate behavior. Work with the child to cooperatively identify appropriate goals, such as completing homework assignments on time and obeying safety rules on the school playground. Take the time to ensure that the child agrees that his or her goals are important to master.

Behavioral contracts and management plans are typically used with individual children, as opposed to entire classes, and should be prepared with input from parents.

- **Tangible rewards.** Use tangible rewards to reinforce appropriate behavior. These rewards can include stickers, such as “happy faces” or sports team emblems, or privileges, such as extra time on the computer or lunch with the teacher. Children should be involved in the selection of the reward. If children are invested in the reward, they are more likely to work for it.
- **Token economy systems.** Use token economy systems to motivate a child to achieve a goal identified in a behavioral contract (Barkley, 1990). For example, a child can earn points for each homework assignment completed on time. In some cases, students also lose points for each homework assignment not completed on time. After earning a specified number of points, the student receives a tangible reward, such as extra time on a computer or a “free” period on Friday afternoon. Token economy systems are often used for entire classrooms, as opposed to solely for individual students.
- **Self-management systems.** Train students to monitor and evaluate their own behavior without constant feedback from the teacher. In a typical self-management system, the teacher identifies behaviors that will be managed by a student and provides a written rating scale that includes the performance criteria for each rating. The teacher and student separately rate student behavior during an activity and compare ratings. The student earns points if the ratings match or are within one point and receives no points if ratings are more than one point apart; points are exchanged for privileges. With time, the teacher involvement is removed, and the student becomes responsible for self-monitoring (DuPaul & Stoner as cited in Shinn, Walker, & Stoner, 2002).

## Classroom accommodations

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The third component of a strategy for effectively educating children with ADHD involves physical *classroom accommodations*. Children with ADHD often have difficulty adjusting to the structured environment of a classroom, determining what is important, and focusing on their assigned work. They are easily distracted by other children or by nearby activities in the classroom. As a result, many children with ADHD benefit from accommodations that reduce distractions in the classroom environment and help them to stay on task and learn. Certain accommodations within the physical and learning environments of the classroom can benefit children with ADHD.

### Special classroom seating arrangements for ADHD students

One of the most common accommodations that can be made to the physical environment of the classroom involves determining where a child with ADHD will sit. Three special seating assignments may be especially useful:

- **Seat the child near the teacher.** Assign the child a seat near your desk or the front of the room. This seating assignment provides opportunities for you to monitor and reinforce the child's on-task behavior.
- **Seat the child near a student role model.** Assign the child a seat near a student role model. This seat arrangement provides opportunity for children to work cooperatively and to learn from their peers in the class.
- **Provide low-distraction work areas.** As space permits, teachers should make available a quiet, distraction-free room or area for quiet study time and test taking. Students should be directed to this room or area privately and discreetly in order to avoid the appearance of punishment.

## **Instructional tools and the physical learning environment**

Skilled teachers use special instructional tools to modify the classroom learning environment and accommodate the special needs of their students with ADHD. They also monitor the physical environment, keeping in mind the needs of these children. The following tools and techniques may be helpful:

- **Pointers.** Teach the child to use a pointer to help visually track written words on a page. For example, provide the child with a bookmark to help him or her follow along when students are taking turns reading aloud.
- **Egg timers.** Note for the children the time at which the lesson is starting and the time at which it will conclude. Set a timer to indicate to children how much time remains in the lesson and place the timer at the front of the classroom; the children can check the timer to see how much time remains. Interim prompts can be used as well. For instance, children can monitor their own progress during a 30-minute lesson if the timer is set for 10 minutes three times.
- **Classroom lights.** Turning the classroom lights on and off prompts children that the noise level in the room is too high and they should be quiet. This practice can also be used to signal that it is time to begin preparing for the next lesson.
- **Music.** Play music on a tape recorder or chords on a piano to prompt children that they are too noisy. In addition, playing different types of music on a tape recorder communicates to children what level of activity is appropriate for a particular lesson. For example, play quiet classical music for quiet activities done independently and jazz for active group activities.
- **Proper use of furniture.** The desk and chair used by children with ADHD need to be the right size; if they are not, the child will be more inclined to squirm and fidget. A general rule of thumb is that a child should be able to put his or her elbows on the surface of the desk and have his or her chin fit comfortably in the palm of the hand.

## Conclusion

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This guide has outlined a series of instructional strategies that have proven to be successful in educating children with ADHD. However, it should be emphasized again that these techniques are also highly useful for *all* children. The three main components of a successful strategy for educating children with ADHD are *academic instruction, behavioral interventions, and classroom accommodations*. By incorporating techniques from these three areas into their everyday instructional and classroom management practices, teachers will be empowered to improve both the academic performance and the behavior of their students with ADHD. In doing so, teachers will create an enhanced learning environment for all students.

This guide is the second in a series of three publications that address issues related to the instruction of children with ADHD. The first is *Identifying and Treating Attention Deficit Hyperactivity Disorder: A Resource for School and Home*. Coming soon is *A Resource Directory for ADHD*. Teachers and others are encouraged to consult these publications and to use them in conjunction with *Teaching Children with Attention Deficit Disorders: Instructional Strategies and Practices*. As the documents become available, they will be listed on the **Office of Special Education and Rehabilitative Services/Office of Special Education Programs** Web site.

U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs, *Teaching Children with Attention Deficit Hyperactivity Disorder: Instructional Strategies and Practices*, Washington, D.C., 2004.

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