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MAKE THE MOST OF YOUR CHILD'S ABILITIES

> Ability is what you're capable of doing. Motivation determines what you do. Attitude determines how well you do it.
>
> —*Lou Holtz*

Every human being is born with both physical and mental abilities. Physically, some of us are stronger or weaker than others, faster or slower, more agile or awkward, and every possible combination in between. We may be strong in one trait and weak in others. Whatever our current physical abilities, we can do something to make them better. We can exercise to be more muscular or increase our endurance. We can adjust our diet to bulk up for playing football, or train ourselves to be faster on the tennis court, but only if we are determined to do so. As the quote from college football coach Lou Holtz makes plain, ability defines our capabilities, but motivation and attitude help to determine our ultimate success. We can improve our physique or physical ability, but only if we have the will to do so.

Mentally, we are born with certain abilities too. We have intelligence, which includes working memory (short-term) and long-term memory, thinking, problem solving, perception, attention, and language (Sternberg, 2002). As with our physical abilities, we may be better in one or more mental abilities than others. Can we get our mind into shape just as we can our body? The answer, according to a range of research studies, is yes. We can also help children get their mind into shape for learning too.

On the basis of a comprehensive analysis of research studies, the U.S. Department of Education concluded that "many highly successful individuals have above-average but not extraordinary intelligence," (Bennett, 1986, p. 16). "Accomplishment in a particular activity is often more dependent upon hard work and self-discipline than on innate ability," added the researchers.

In their study of eighth grade students, researchers Angela Duckworth and Martin Seligman (2005) found, for example, that self-discipline was more important than ability as measured by an IQ test. "Highly self-disciplined adolescents outperformed their more impulsive peers on every academic performance variable, including report-card grades, standardized achievement-test scores, admission to a competitive high school, and attendance," wrote Duckworth and Seligman in their research paper published in *Psychological Science*.

Shari Tishman (2000, p. 43), from Harvard's Project Zero, drew similar conclusions from her study of sixth grade students, noting that students have "abilities that they don't use or they don't use appropriately."

A major step for parents therefore is to capitalize on their children's abilities. This chapter describes *Get Smart!* learning strategies to improve your child's ability to acquire and recall knowledge, apply knowledge, concentrate, self-monitor, think flexibly, and improve creativity.

Improve Your Child's Ability to Acquire and Recall Knowledge

It was another heavy homework evening for my daughter, Markie, a sixth grade student at the time. She finished all of her math homework except for a few challenging problems at the end. It didn't take long to see her confusion. The problems were new to her, solving the perimeter with two unknown variables in two equations. With both of us worn pretty thin, I needed to motivate Markie and determine the best way to help. Complicating matters, I had no idea how she was being taught to solve such problems; nor had I done

similar ones in many years. I promised her a great bedtime story if she got through the assignment. We plodded ahead and finished, but it was clear that her understanding needed reinforcement.

At bedtime and as expected, Markie called on me to deliver my story. Typically, my stories are completely off the top of my head, and this one was more so than usual. I used the bedtime story as an opportunity to help Markie visualize what we had covered earlier that evening, supporting what she already knew about perimeters combined with just a beginning knowledge of unknown variables.

I told Markie about a girl who wanted to know the size of her room. The next day, the girl was going to teach her classmates how to measure the size of their own rooms, consequently she really needed to understand how to do it. So at 9:15 P.M., we were measuring the perimeter of Markie's room, applying the day's lesson to a real situation. When we were done, Markie thanked me for another great story and hopped into bed, secure in her mind that the perimeter of her room was fifty feet.

The next evening, she told me that her math problems were all correct, which made us both feel good. I knew that Markie still needed more help in thinking through this new concept, so I sent a note to her math teacher, who reviewed the material with her.

Because this was new knowledge, Markie needed multiple opportunities and different ways to understand it. As parents, we can help our children learn by evaluating what they know or don't know, reinforce their new knowledge in several ways, and solidify their understanding by following up with a teacher.

Learning Expectations Emphasize Factual Recall

The *Taxonomy of Educational Objectives* (1956), a well-known 1956 handbook authored by Benjamin Bloom and other social scientists, defined *knowledge* as observation and remembering (recall) of previously learned information. In the taxonomy, acquiring knowledge precedes higher-order thinking skills such as problem solving, application, and evaluation (Eisner, 2000).

Nearly fifty years later, education still focuses on knowledge acquisition and retention, as reflected in many national and state education standards, including these examples:

- Knows the language of basic operations (for example, factors, products, multiplication)
- Knows that water can be a liquid or a solid and can be made to change from one form to the other, but the amount of water stays the same
- Knows the features of the major European explorations that took place between the fifteenth and seventeenth centuries
- Knows appropriate terminology used to explain music, music notation, music instruments and voices, and music performances

Such standards—in fact, most education standards—depend heavily on recall. Students must memorize "features of major European explorations" or demonstrate that they "know the language of basic operations." Similarly, most tests that students take in school measure their memory ability or ability to solve short problems. Students with a strong memory tend to perform well and students with weaker memory tend to perform less well.

Your child's classroom assignments probably confirm the strong-memory component in most learning. Weekly spelling or vocabulary words are good examples. Students in elementary school frequently receive a list of spelling words on Monday, study during the week, and take a test on Friday. Although many textbooks have been revised in recent years to incorporate more problem-solving skills that represent the higher levels of the taxonomy, most textbooks remain fact-heavy. Social studies textbooks are usually a good example of a continued factual recall emphasis.

There isn't anything wrong with knowing facts. Even advanced learning models such as the CRESST models developed at the center where I work require important factual knowledge. Research by Eva Baker, Pam Aschbacher, David Niemi, and Edynn Sato (1992), for example, has shown that prior knowledge is important for per-

forming well on complex assessments. As I tried to do with Markie's math assignment, parents can create opportunities that support their children's ability to acquire new knowledge.

Early and frequent usage is a key method for improving memory, for children and adults. Most children take a foreign language in school, sometimes beginning in elementary school although usually starting in middle or high school. Yet few become proficient. Despite starting to learn Spanish in seventh grade under the careful teaching of Ms. Kuhl and continuing my Spanish courses through my senior year of college, I never became a fluent Spanish speaker because only English was spoken in my home and I don't use the language frequently. Most students don't become fluent in a foreign language for the same reasons. Frequent usage and support improve memory.

Help Your Child Acquire and Recall Factual Information

How can you help your child store the type of knowledge he or she needs to succeed? First, it's useful to have some measure of your child's ability to recall facts. During your reading time together, ask your young child to occasionally summarize the story that you have read so far. According to learning researcher Merl Wittrock (1990), summarizing helps students connect words, sentences, paragraphs, and concepts that are reinforced by their personal knowledge and experience.

Ask your child, What are the names of the main characters? What seems to be the central problem or conflict in the story? What obstacles is a character encountering? How do you think the story will end? I've used this process productively with both of my children and found that it allows me to informally evaluate their recall ability while conveying to them the value of memory and prediction. It also gets them into the habit of answering questions about their reading, which is an essential ability for performing well on any reading comprehension test.

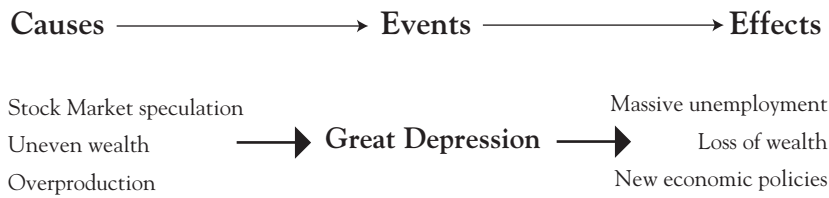
To measure longer-term memory, try asking your child at dinner to tell you one thing he or she learned in school that day. Not only do you find out what your child is learning, but you can also evaluate his or her ability to recall, summarize, and express ideas. Asking about your child's learning also communicates the value you place on education.

Regardless of your child's current recall ability, you can enhance it by encouraging specific learning strategies. Three suggestions are to *write* it, *draw* it, or *simplify* it.

Writing something down gives meaning to it and creates a written record that can be referred to later. Making a note or outline can focus your child's attention on a historic event, a lesson, or a procedure, often long after he or she was introduced to it the first time. If your child has an assignment and can't seem to get started, have her write down what she remembers about the topic. It is often more than what she can remember verbally. Once she has brainstormed in writing what she knows, it is usually easy to organize and finish the remainder of the assignment. It also establishes a good habit of writing to reinforce recall.

Drawing slows us down and helps us concentrate on ideas, procedures, and relationships. Drawing may help us to recognize similar situations we have encountered and bring back information to reinforce our memory. A simple way to use a drawing is a cause-and-effect diagram. Let's say that the event is the Great Depression. Your child places the event, Great Depression, in the middle of the page, together with causes of the Depression to the left and effects to the right. Even with a moderate amount of effective instruction about the Great Depression, your child should be able to list at least two or three causes and an equal number of effects, just from memory. (Causes might include stock market speculation, lack of regulated stock trading, uneven distribution of wealth, and overproduction of consumer products. Effects were massive unemployment, loss of individual and corporate wealth, a series of new economic policies, and even a second world war.) A simple diagram (such as Exhibit 1.1) can help a child recall information, organize it, and have it become a model for future assignments.

Exhibit 1.1. Simple Diagram of Event, Causes, and Effects



Simplifying can help children understand a difficult concept or reduce an overload of information. One week in elementary school, for example, Markie had thirty-one spelling words to remember for her Friday spelling test. It looked overwhelming, given a high homework load for the week. In reviewing the words, we noticed that there were only nine unique words and that each unique word ended with an *e*. The other twenty-two words were adjectives or adverbs of the root word. This greatly simplified the recall that Markie needed to do, and she performed well on the test.

Researchers and learning experts have investigated many methods for enhancing recall. The following tips are derived from ideas put forth by Dr. Mel Levine, an expert in children's learning styles (2002):

- *Paraphrase a lesson or chunk of learning.* It is impossible to remember everything contained in a textbook or everything a teacher says in class. Paraphrasing condenses longer information into shorter bits of information. For example, in taking a note in class, your child creates a bullet point that says "1920, Woman's Suffrage." Because the class has been studying the constitutional amendments, this short phrase should be enough to jog his or her memory that in 1920 a new amendment was passed to the U.S. Constitution giving women the right to vote. It is also something that can be written down quickly, reducing the probability of losing the next important point.
- *Form associations with previously learned terms or concepts.* In kindergarten or first grade, students learn how to add. Later, teachers

use what students know about addition to help them learn multiplication, which is basically another form of addition. What was been learned about a previous concept can help a child learn a new concept.

- *Talk through a procedure*. Sometimes also known as *thinking aloud,* verbalizing information helps children remember it. Talking or thinking aloud repeats and therefore reinforces previously learned information. It can also help to exclude from a child's memory other information that is less important.
- *Establish rules*. Rules are useful because they can be applied to many situations to support memory. In Chapter Seven, I describe a four-step rule that I use to help my children solve word problems in mathematics.

Mary Ann Rafoth, Linda Leal, and Leonard DeFabo also offer a number of research-based strategies for improving memory (1993). Memory can be improved if students:

- *Classify* information into specific categories, such as placing foods into a food chain. Animals can be classified as mammals, birds, reptiles, insects, and fish. Because each category generally has similar visual features, the classifications can help students to remember the animal.
- *Self-test* to enhance memory. Flashcards or one-page summary sheets reduce the total amount of information to be recalled. They also allow frequent repetition, which supports memory.
- *Use organizational strategies* such as identifying similarities and differences in items or events. Chunking information helps to organize our thoughts, jog our memory, and express what we know to others. Cause and effect, inputs and outputs, and simple models can support children's recall.

Here are a few more examples of memory-enhancing concepts. Mnemonics are often helpful for improving memory. The rhyme, "Thirty Days Has September . . ." is a verbal mnemonic technique

that many of us used as children to help remember the number of days in each month. Association with familiar objects is another useful mnemonic technique. For example, Kenneth Higbee (2001) says that you can remember a piano has fifty-two white keys by associating fifty-two with the number of cards in a deck and thirty-six black keys with the number of inches in a yardstick. According to Higbee, research indicates that even very young children can benefit from the use of mnemonics as a memory technique, and that making up your own mnemonics tends to be more successful than having somebody give you one. Researcher Robert Mislevy described what worked for his daughter:

> In early grades, one of our daughters had a hard time memorizing a lot of unrelated facts, so we encouraged her to use mnemonics. We explained that meaningful things help you to remember, but mnemonics can help you remember what is not easily connected or meaningful. One time in third grade she had to learn a large number of musicians, more than 20, plus the instrument that each of them played, so we developed a mnemonic to help. Wynton Marsalis was a famous jazz trumpet player on her list. To help her remember his name, we said that blowing a trumpet was like blowing *air into a sail* (m'air sail es). It worked.

Our memories benefit from practice. Research indicates that children who participate in challenging thinking games can develop vocabulary and strategies that help them in other situations. Reinforcement in practical situations, such as identifying the capitals of states whose license plates you see on a long road trip, may also contribute to factual recall. Give your child lots of opportunities to expand vocabulary, and learning is likely to improve.

Recall can be enhanced through a conscious process of concentration and reinforcement. For example, you or your child has just met a new person called Sabrina. Set yourself a goal that at the end of the conversation you will say, "It was nice meeting you, Sabrina." Just setting that goal is likely to lead to a process whereby you

remember her name. You might use her name several times during the conversation; remember that Sabrina was the name of a television show called "Sabrina the Teenage Witch," or that you have a niece or friend named Sabrina. You set a goal, reinforce the name through repeated use, and associate the name with a visual of other people having the same name. Similar methods can help enhance a child's recall in school. Mayflower is the combination of the name of a month, May, and the part of many plants, flower. Custer's last stand occurred in 1876, a date that can be remembered as one hundred years after the signing of the Declaration of Independence in 1776.

Improving knowledge and recall ability at a young age is an important foundation for good learning habits and study skills later in school.

Improve Your Child's Ability to Apply Knowledge

On the way to school one day, Jacquey Barber's son exclaimed that the route they had just driven to school was shorter than other routes they had taken in the past. Barber, the associate director of the Lawrence Hall of Science at the University of California, Berkeley, asked him, "How do you know?"

"Well, it takes less time to get to school" he said. But Barber wasn't convinced and encouraged her son to collect evidence, using scientific methods he had learned in school.

Thus began a multimonth inquiry into finding the most efficient route to school, a practical problem in the urban streets of Berkeley, California. Barber and her son set up several driving routes in as scientific a method as possible, trying to alter just one factor each day. Her son measured and recorded distances, departure times, and arrival times, with Barber asking many questions, such as why a longer route might require less time to travel. Eventually they had scientific evidence of which route was usually the

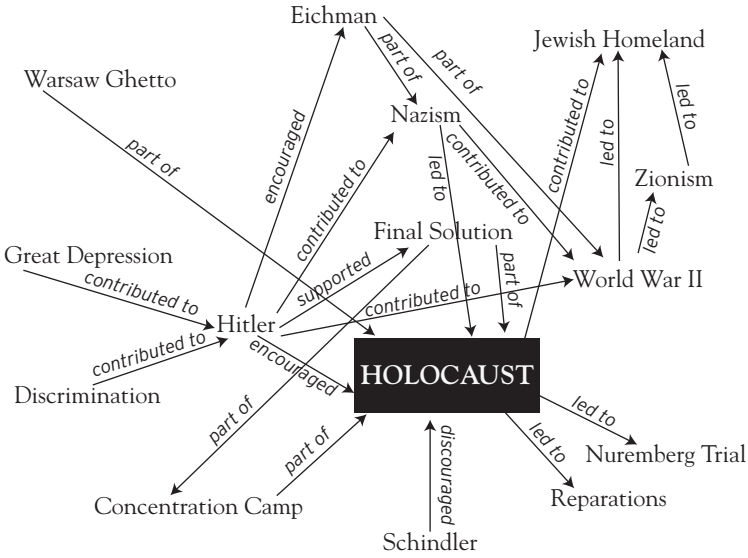
fastest, depending on their departure time. Using a real-world question, Barber supported her son's ability to apply his knowledge to a practical problem: getting to school in the least amount of time (adapted from Barber, Parizeau, and Bergman, 2002). Parents can use similar opportunities to encourage their children to apply their knowledge to practical applications.

One of the goals at the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) has been to develop innovative assessments that measure students' ability to apply their knowledge. Some of the assessments require students to use factual knowledge, combine it with new information, and apply it to a specific problem. In one assessment, students are asked to read original source materials, such as the Lincoln-Douglas debates, combine their understanding of those documents with their prior knowledge, and then write a well-constructed essay on the issue of slavery. Another assessment, called a knowledge map, requires students to show that they understand the relationships between key events, not just know them as a group of disconnected facts. Most CRESST assessments require the ability to apply prior knowledge to a new situation, and in many cases solve problems in a way similar to how experts solve them. Figure 1.1 is a sample of the types of problem-solving assessments developed at CRESST that measure application of knowledge, not just regurgitation of facts.

Parents can help their children solve complex problems by encouraging them to apply existing knowledge and skills. For example, when her daughters get stuck on a tough math problem, parent Cindy Wilcox says she helps them apply what they know. "I take them back to a similar, but easier, math problem that they have previously solved, then apply the same problem-solving process to the question they can't do," says Wilcox.

In nearly all cases, the technique works. Cindy's daughters have the knowledge and ability to solve the new problem, but they sometimes need someone to help them apply or transfer the appropriate skills. Testing researcher Robert Mislevy explains his approach:

Figure 1.1. Knowledge Map Assessment



The most important way that my wife and I tried to help our girls succeed was to connect what they were learning in school to the real world, to get them to see other boxes of their life, the big idea. This was true especially on their school assignments, especially in fourth through ninth grade. For example, on a science experiment which focused primarily on procedures involving gases, liquids, and solids, we asked them three things. What are you trying to do? What are the teacher expectations? How does this connect to something in the real world, like getting gas at the gas station? We believed that seeing practical uses for science and math would encourage their effort and it did.

Here are a few more ways to help your child apply existing knowledge:

- Encourage writing, whether it is short notes, a letter to a friend or relative, or a diary. Writing builds on existing vocabulary, encourages personal expression, and helps children organize their thoughts.

- Find problems that can be solved in more than one way or that have more than one solution. Show your child a different way of solving a problem or conducting an experiment.
- Expose your child to a variety of life experiences. Visit a museum, and point out how an artist uses light, the same light that grows crops in a field, the same light that caused last year's sunburn.
- Reinforce student learning with academically focused computer games, which require your child to apply academic skills to fun activities. Spelling, vocabulary, math, science . . . all topics can be reinforced through computers.
- Play board games with your child, especially games that build on vocabulary or thinking skills. Chess has thousands of ways to win or lose and forces players to think ahead. Monopoly reinforces counting skills in young children and can be used to teach money management.

"To help our three kids improve their abilities," said Meredith Reynolds, who served twelve years on the La Cañada Unified School District Governing Board, "we involved them in a broad variety of activities when they were growing up, including art, music, and sports, both team and individual sports. We oftentimes would pick things that we didn't know much about so that it was something new for all of us, sort of like, 'What's this about? Gee, I don't know; let's go and find out.'"

Improve Your Child's Ability to Concentrate

> The ability to focus attention on important things
> is a defining characteristic of intelligence.
> —*Robert J. Shiller,* Irrational Exuberance

Jeff Koberstein was one of the smartest kids in Menomonee Falls East High School. He earned good grades in every subject despite taking the toughest classes and working more than thirty hours

every week at JC Penney's, saving money he would soon need for college. Jeff was also a gifted piano player. Despite the fact that he had little time left for studying, he graduated second in his high school class, worked his way through college, and became a professor of chemical engineering at Princeton University.

Today Jeff is a professor and leading researcher in chemical engineering at Columbia University, where he teaches and conducts research on the molecular structures of polymers. He said that doing well in school came from his ability to concentrate for sustained periods of time. He could call on that ability for a specific, extended mental task.

Not all of us have Jeff's deep concentration. I have been known to walk the length of my house with a clear-cut purpose in mind, only to arrive at the other end and find myself distracted in my own thoughts. I blame our dog Goldie for such distractions (and a host of my other personal shortcomings), but the truth is that all of us fail to concentrate at one time or another.

School requires the ability to concentrate deeply and remain focused for a long period of time in a multitude of school subjects that may hold little interest for kids. It's no surprise that children with attention problems struggle. Unable to maintain the necessary concentration that school and life require, they are frequently on someone's "needs improvement" list. Distractions, such as a noisy classroom, which may pose few problems for most kids may further erode their concentration.

Research supports the importance of helping children develop listening skills in early grades. In one study, children who were good listeners in kindergarten and first grade became successful readers by third grade. Researchers in another study found that students who were good listeners in fifth grade performed well on aptitude and achievement tests during their high school years (Bennett, 1986). M. S. Conaway found that listening skills were a stronger factor in predicting college student failure than reading ability or aptitude (1982). Because anywhere from 50–80 percent of what we learn comes from hearing, listening is an essential component of

concentration and one of the first areas in which students show problems (Rafoth, Leal, and DeFabo, 1993).

As with reading, one good way for parents to help their children improve listening skills is to ask them questions shortly after a conversation. Questions convey to children the importance of careful listening, an important school expectation. Being a careful listener yourself sets an example for your child. When my children say something that I don't understand, I summarize back to them what I thought I heard. This helps us both focus on the conversation.

Here is a list of strategies to help develop your child's concentration skills at any stage in school:

- Encourage and praise your child often for quality work on assignments or projects that require sustained focus.
- Play games that require strong concentration with your child, such as Scrabble or Othello, not just at an early age but as they grow older too.
- Emphasize to your child that good school work requires strong concentration skills at home and at school. Have your child close his eyes and listen carefully to the noises around him. What does he hear? It might be a radio, a television, or a dog barking. Does your child see how these sounds can be distracting, especially to someone concentrating? At school, suggest that your child watch how some students are able to concentrate while others cannot do it well. Encourage finding a setting that allows the best concentration. It may be a special place in the library or a quiet corner in your home. Because you can't be with your child all the time, it's important for him to develop an ability to avoid or control distractions.
- If you have an opportunity to help in the classroom, observe your child's concentration and compare it to that of other students of the same age. You can't see your child listening, but you can observe her on the computer or contributing to work in a small group setting. If you don't have an opportunity to visit your child's classroom, observe her concentration while on a trip to the museum, zoo, or any setting where other children are present.

- If your child seems easily distracted, ask the teacher that she or he be permitted to sit in the front of the classroom. Sitting in the front row means less distraction, and most teachers are happy to comply with such a request.
- Look for indicators of lack of concentration outside the classroom. Missed or late assignments, incomplete agendas, lack of note taking at higher grade levels, or dropping grades may suggest that your child's concentration needs improvement.
- If you believe that your child has attention deficit disorder or attention deficit hyperactivity disorder, by all means request a formal evaluation from the school. I also suggest that you discuss the issue with your child's pediatrician and ask for a referral to a trained psychiatrist specializing in learning disorders. If your child does have a disorder, work closely with teachers and counselors to help meet specific needs.

Not every child's concentration skills will develop at the same rate or reach the same level. I will never have Jeff Koberstein's concentration ability. Be careful to keep your expectations realistic. If you have concerns, discuss them with your child's teacher. As I mentioned in the Introduction, multiple measures should be used to evaluate any aspect of your child's abilities, including concentration.

Improve Your Child's Ability to Self-Monitor

Three children—Sammy, Jason, and Anna—are at home, applying what they learned in math class today, focusing on the correct mathematical order of operations. In today's lesson their teacher showed them that the correct order was what we see in Exhibit 1.2. To help them remember, she used the mnemonic phrase "Please Excuse My Dear Aunt Sally."

Sammy is doing his homework. Because he remembers today's classroom lesson quite well, he finishes quickly, without a single error. He recalls that they covered the same material in fifth grade, so today's homework seems pretty simple.

Exhibit 1.2. Sequence of Math Operations

parentheses → exponents → multiplication → division → addition → subtraction

Jason is moving through the same problems at a rapid rate, but in the back of his mind he thinks about his need to finish before tonight's soccer match. He gets to a question that throws him for a moment, but he applies what he recalls from today's lesson and chugs ahead. Unfortunately, this question and several similar to it are incorrect when he turns his homework in the next day.

Anna is progressing along on the same assignment when she encounters a problem similar to Jason's. She says to herself: "I'm not sure my thinking is right on this." Anna checks her answer in the back of the book and realizes that she made a mistake. She goes back to her original textbook lesson and finds an exception to the order of operations. She makes the change and finishes the problem. Just to make sure, she asks her mom, who confirms that her problem-solving method was correct. Anna finishes the rest of her math problems without error.

This simplistic example illustrates a concept called metacognition, sometimes called self-monitoring or self-regulation—being aware of our own thinking. In this example, Sammy didn't have to think about his thinking. He understood the order of operations and its exceptions so well that the work was automatic. Jason, on the other hand, thought he was doing the problems correctly. When he encountered an obstacle, he just kept plugging away, not aware of his mistake or too impatient to self-regulate his work. The third student, Anna, monitored her learning by checking her answer in the back of the book, recognizing a possible error, using her textbook to help her correct a misunderstanding, and asking her mom to review her strategy. She not only monitored her work but took steps to support her own learning.

Being aware of your own thought processes and regulating your own learning is a key ability of high-achieving students. Although

even kindergarten students monitor their own thinking, most students don't develop these skills until about age eleven (Costa, 2000). Even then, it's usually a slow process. Some students and adults seldom think about their thinking. Like Jason, they act impulsively to get it done so they can move on to more pleasurable activities. If academic learning is a low priority to them, they may put forth minimum effort or avoid tasks that require deep thinking.

To encourage self-monitoring of children's thinking skills, parents may ask their child to use a *think-aloud* process while working on an assignment, as mentioned earlier in this chapter. Children simply talk about their thinking as they work on a specific task. Quite a few researchers have found positive effects from thinking aloud.

Another strategy is to ask children *probing* questions along the lines of "Why did you do that?" and "What seems to be the difficulty?" Or ask your child to explain the problem in his own words, with the goal of finding his own mistake, avoiding the same mistake in the future, and developing his own mistake-detection ability.

You will probably be tempted to use *prompting* questions. This kind of question suggests a process that a student has missed or not considered, such as "Did you check your addition?" Although such questions may lead to a quick solution, they do not seem to lead to improved learning because they don't push a child forward in self-monitoring work (Dominowski, 1998).

Evaluations of some self-monitoring training programs, such as the Strategic Content Learning Approach, have shown that these programs can improve students' problem-solving strategies, self-monitoring knowledge, and motivation (Butler, 1998). But self-monitoring training programs are rare. Here are some ideas on how to enhance your child's self-monitoring skills at home:

- At an early age, encourage your child to evaluate her own work and recognize when she needs help. If, after trying her known list of strategies, your child is still hung up, she should seek infor-

mation in a book or on the Internet, or ask you, a friend, or a teacher. Research shows that higher-achieving students seek help more often than lower-achieving ones (Dembo and Gubler Junge, 2005).

- When encountering a difficult task, encourage your child to explain what she is doing and why. Ask questions about obstacles, if this looks like other tasks she has done, and previous strategies she has used.
- Avoid questions or comments that infer or lead directly to a solution. For example, "Is your multiplication correct?" is a dead giveaway that the student made a multiplication error. A better question might be, "Does the answer seem reasonable to you based on the given information?" or say that the answer is not correct, but "Can you find the error?"
- A problem may be easy for you but quite difficult for your child. Don't say "Think harder" in hopes that your child will suddenly get it. Take a deep breath, give yourself a moment, and think about how you can help your child move ahead. Alternately, switch to another problem or part of the assignment if your child is stuck on it for more than a few minutes.
- Ask your child to explain to another person the problem, a strategy for solving it, and then the solution. Having to teach a subject requires an excellent knowledge of the content and concepts (Dembo and Gubler Junge, 2005).
- Manage your child's impulse to just "do it to get it done," as Jason did in our earlier example. Many high-achieving students analyze the problem or assignment, put effort into understanding the skills needed to complete a task, know how it will be graded, and check their work. Encourage your child to develop similar skills.

Researcher Robert Mislevy described his approach:

> Another way we tried to help our daughters in school was to increase their ability to self-monitor their work. We didn't want them

> to just apply an algorithm to a math problem, or memorize facts and dates. One time when my daughter read an English story three times, trying to find an answer to a question from a study guide, she became very frustrated because she just couldn't find the answer in the book. She asked me for help and I read the story. I said, "A-ha, you're right; the answer isn't there. But the purpose of the teacher's question is to make you think, to connect ideas together. You have to infer an answer from information within the story." I encouraged her to go back, reread the story and look for clues that would help her answer the question. This helped her to connect ideas together and improved her ability to self-monitor her thinking process.

Self-regulation is not an overnight process. As with most learning, students vary at the age and depth to which they acquire this important ability. Be patient and persevering. As the writer and philosopher Napoleon Hill said, "Education comes from within; you get it by struggle and effort and thought."

Monitoring Time and Priorities

Time awareness and management is another important ability in children with strong self-monitoring skills. "Sensing when and how to get going, knowing when the process is speeding up excessively, or when it is getting bogged down and needs to be moved along," says Dr. Mel Levine, "is a key ability of good problem solvers."

Years ago as a student at the U.S. Air Force Squadron Officer School, I participated in an exercise called the "in-basket." Every officer was given an overflowing in-basket containing numerous memos, letters, and to-dos. Students were told only that they needed to work on the in-basket tasks within a specific amount of time.

When given the green light, I attacked my in basket with vigor, determined to finish every task there was to do. I went through in direct order of the tasks, top to bottom. When time was up, I had

made a pretty good dent in my stack, although there were still a number of tasks I never reached. The instructor then explained that the intention of the in-basket exercise was not to see how many tasks we had completed, but to see how well we prioritized our work given a limited amount of time. The desired method was to review each in-basket task and prioritize it, such as A, B, and C, then work only on the most important tasks in the A basket. Like others, I learned a valuable lesson that serves me well today.

The next time your child has a major assignment, encourage estimating how much time it will take to do it. Your child should consider how important the task is (for example, how much will it count toward a grade?), estimate how long it might take to do a minimum job, and how much time to do a high-quality job. This also helps your child know when to start. In school and in life, the ability to prioritize work is essential.

Improve Your Child's Ability to Think Flexibly

Most of school is not too flexible. There are rules for students, rules for teachers, rules for school districts, and rules for parents. You and your children probably receive a large packet of rules just before school each year that govern everything from tardiness to the dress code. There are rules for behavior, and subjects have very specific rules (such as "*i* before *e* except after *c*", although there are many exceptions that you just need to memorize).

We encourage flexible thinking in our children, epitomized by the cliché of "thinking outside the box," but we don't often create a flexible environment for it. This is perhaps why some of our most famous inventors and artists never finished school. Thomas Edison was in and out of many schools, was thought to be unteachable, and was eventually home-schooled by his mother. Yet Edison's ability to think flexibly contributed to more than a thousand patents, invention of the light bulb, phonograph, movie projector, and many more accomplishments.

Flexible thinking is a valuable skill, especially when our children's thinking becomes blocked. Moreover, inflexible thinking can result in substantial learning obstacles. In a study of algebra abilities, Mercedes McGowen and David Tall (2001) found that inflexible thinking contributed to students' inability to reach even a proficient level in intermediate algebra concepts, despite extensive and repeated instruction. "The inability to think flexibly," concluded McGowen and Tall, "leads to a fragmentation in students' strategies and a resulting divergence . . . between those who succeed and those who do not."

My son, Coty, is often a one-way thinker. In elementary school, he was struggling with the concept of negative numbers. "How can you have less than nothing?" Coty asked. "That's a good question," I said, and told him that we use negative numbers as a mathematics tool to help us solve certain problems. Elevation is one example, I said, such as above and below sea level. We found a submarine example in Coty's textbook to illustrate negative numbers and discussed other examples of how negative numbers can help solve practical problems. Having images to guide Coty finally warmed him up to the idea that negative numbers can help solve common mathematical problems.

With a bit of creativity on our own part, we can encourage flexible thinking in our children. Draw a straight or curved line on a sheet of paper, and then ask your child to create a drawing using that initial line. She might draw a building, a stick figure, a face, an animal, a building, or a thousand other possibilities. Once she is done, repeat the initial line and ask her to draw something very different using the same line. The idea, of course, is that from just a simple beginning, many drawings are possible, with no two quite alike and no one drawing necessarily any better than another. If you are looking at a black-and-white photograph with your child, casually point out that even a black-and-white photograph has many shades of gray; it isn't truly just black and white.

Although art often lends itself to flexible thinking, any topic can be used, including math. If you are going on a road trip, each

person in the family can estimate how long it will take to get to your destination. Have tools available, including a map, string, ruler, and calculator. Once everyone is done with his or her estimate, each person describes how they made an estimate. Ideally, you will have several methods ranging from how the distance was measured to inclusion of variables such as traffic delays, route, and number of bathroom, gas, and meal stops needed. Use an Internet map, and see what it estimates the travel time to be. Ask your child, "How do you think the mapmakers estimated travel time?" which likely varies among Internet sites. Compare your actual travel time with each person's estimate, both going and coming home, and with the Internet estimate. Point out that even in mathematical calculations flexible thinking is important, and one way of solving a problem may not be more accurate or better than another.

Social studies and civics can also be topics for flexible thinking. Ask your child, "Why does the world have so many forms of government? religions? political parties? Do all governments, religions, and political parties have common elements? Do they have major differences? Can we say definitively that one political party is better than another? At school, how do social groups form? Do social groups form along gender, race, and personal interests?" The key point is that flexibility exists more than they probably think, and flexible thinking can create a more flexible world.

Improve Your Child's Creativity

> Every child is an artist. The problem is how to remain an artist once he grows up.
>
> —*Pablo Picasso*

Creative thinking and school do not always go hand in hand. Many artists, notably Pablo Picasso and the U.S. photographer Ansel Adams, disliked school immensely. Although a talented painter even as a child, Picasso struggled to read and write. Adams's severe attention problems contributed to his leaving school at age thirteen,

yet his creative abilities made him America's most popular photographer. Both parents and researchers consistently believe that creative thinking is important to a child's education. The American Psychological Association supports the importance of creativity in their Learner-Centered Psychological Principles, noting that a "learner's creativity, higher order thinking, and natural curiosity all contribute to motivation to learn" (APA, 1997, n.p.). Several research studies as well have found a correlation between creativity and achievement. Karnes and others (1961) found that overachieving students had higher creative abilities than underachieving students, while McCabe's study (1991) of 126 children found a strong relationship between scores on a creativity assessment and scores on English achievement tests.

Two common traits of creative thinkers are that they usually master the fundamentals of their craft at an early age and have deep subject matter knowledge. The son of a painter, Picasso created traditional paintings and illustrations by the time he was eight years old and quickly surpassed his own father in technique and style. Ansel Adams began taking his Yosemite photographs at age fourteen, and by fifteen he was honing his black-and-white developing skills at Frank Dittman's photo finishing business in San Francisco. Creativity may seem to be at odds with basic skills, but a more accurate case is that highly creative thinkers master basic skills in their youth, preparing them to spend the rest of their life exploring new ideas.

Another trait common to most creative thinkers is the ability to discipline their energy. The artist Winslow Homer, for example, produced a prodigious number of illustrations, oil paintings, drawings, and watercolors. He created more than six hundred watercolors and about half that number of oil paintings. Ida Lupino was both a prolific actress and a successful director, writer, and producer. In addition to starring in more than fifty feature films and television shows (among them "The Untouchables" and "The Fugitive," Lupino was the first woman to direct an episode of "The Twilight Zone" and was the second woman admitted to the Directors Guild of America; Maltin, 1995). Most successful creative thinkers pro-

duce an abundant amount of work and are self-motivated. They are not on the golf course or at the mall when they could be creating. Similarly, children who have strong creative thinking skills also tend to be self-motivated and less driven by external factors such as rewards (Fasko, 2000–01).

What are some common traits of families that have helped to nurture their children into highly creative thinkers? In his book *Creating Minds*, Howard Gardner (1993) analyzed seven highly creative thinkers of the twentieth century: Picasso, Sigmund Freud, Albert Einstein, Igor Stravinsky, T. S. Eliot, Martha Graham, and Mohandas Gandhi. Gardner found that, in general, the families of highly creative persons were not highly educated themselves, but they had high expectations for their children and valued learning, achievement, and hard work. Gardner noted the importance of "positive models in childhood of a creative life," and a "special relation to one or more supportive individuals." Einstein said that "curiosity is a delicate little plant which, aside from stimulation, stands merely in need of freedom."

Parents can develop an environment that supports their child's creativity. As with most aspects of learning, give your child many choices in activities and model the behavior that you desire to see. Although my daughter has never been a prolific writer, during Christmas vacation at age thirteen she picked up her computer and started to write a story about two star-crossed lovers in a medieval setting. Perhaps coincidentally or not, I was completing this book at the kitchen table; or maybe she was motivated by her recent school study of Romeo and Juliet. Whatever the motivation, Markie wrote almost nonstop, and I praised her from first draft to final version, being careful not to criticize or offer my own ideas about how the story should go. This was her creative writing and I was thrilled to see her internally motivated to do something she had never done before. Forcing her to do a similar project would never have been successful.

Parents have to provide time for creative projects, which may mean sacrificing other activities or controlling existing time, as with

limiting video games, television, or Internet surfing. School breaks during the year are other good opportunities. Research by Joseph Renzulli (1992) indicates that the deeper a child's interest in a subject, the greater a child's creativity in that subject. Other ways to support a child's creative thinking are to introduce him to creative people, whether individuals you know or through museum visits, music and theatrical performances, and art shows. Enrolling your child in an extracurricular program matching his interests and encouraging imagination is another way to promote your child's creative thinking ability.

Most children ask many questions; this presents an excellent opportunity for parents to support their creative thinking. The next time your child asks a question, instead of saying the answer, you might suggest, "Let's find out together." Then guide, not direct, your child to discover the answer whether it is from a book, on the Internet, or through a simple experiment. The goal, of course, is to encourage the learning process while simultaneously supporting creative thinking.

Andrea Terry, former president of a local PTA, explained her approach to giving children an environment that nurtures their creative abilities:

> Children frequently see our compliments as an expression of our love, not as a true measure of their talents. Consequently it's often difficult for parents to convince their children that they have creative abilities. As a parent of two daughters now in senior high school, my experience has been that if someone else compliments them, they are more apt to believe it. So, you put them into situations where they will get these strokes. For example, you put their artwork up where it will be noticed by those coming into the house. You ask them to design your holiday card. You have their favorite picture made into greeting cards. You enter their work in the school PTA Reflections contest where all kids are honored for participating. You sign them up for art lessons because the art teacher will tell them they have talent.

> Some other suggestions are to find fun teachers and classes that nurture their creativity. Local community centers usually have classes in everything from pottery to photography. Museums have classes. Some colleges have summer programs for kids in middle and high school too.
>
> Notice what your children like to do and find a way to expand it, even if they buck you some. Their resistance is usually nervousness due to not feeling confident about their creative skills yet. You have to explain that there will always be people who are better at this or that than they are . . . but they will be better than a lot of people too. We all have different styles and tastes, and need to appreciate that in each other's work. We need to teach them that the process is important. What we enjoy, like art, feeds the soul. We teach our children that feeding our soul . . . our creativity is important throughout our lives. It is where we find joy and meaning. Our creativity will grow and meander into other parts of our lives as a result.

"Nurture your child's curiosity and creativity," advises Hasmik Avetisian, an early elementary educator at UCLA's Corinne Seeds University Elementary School. "Recognize that your child is an individual with a set of specific needs, feelings, and abilities that are different than your own, and different from other children."

Ability then, is the first component of the Get Smart Learning Model. Whatever its starting point, children can improve their physical, creative, or mental abilities, but as Lou Holtz says, it is then effort and attitude that determine just how far a person will go.