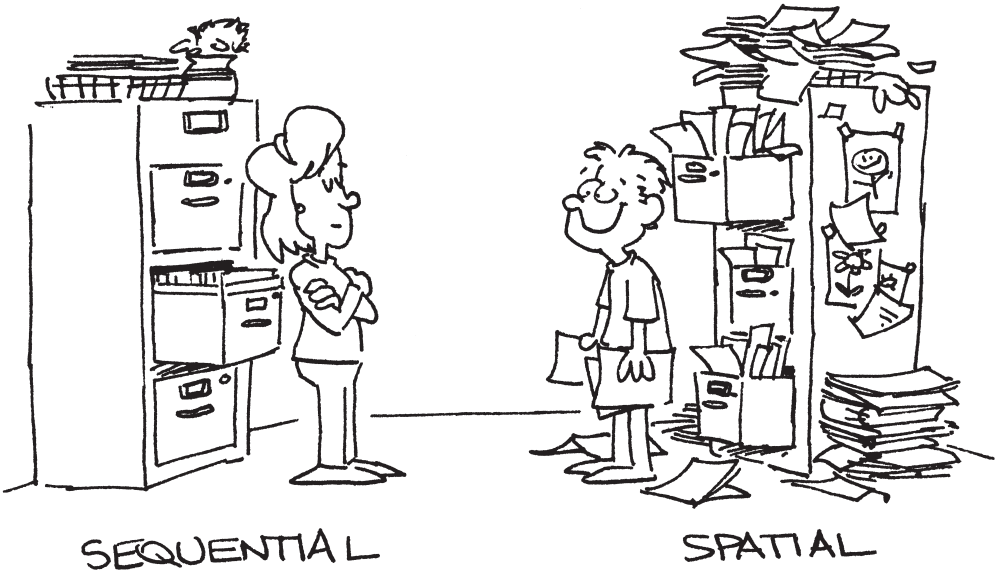
The Visual-Spatial Classroom

Differentiation Strategies that Engage Every Learner!



Alexandra Shires Golon

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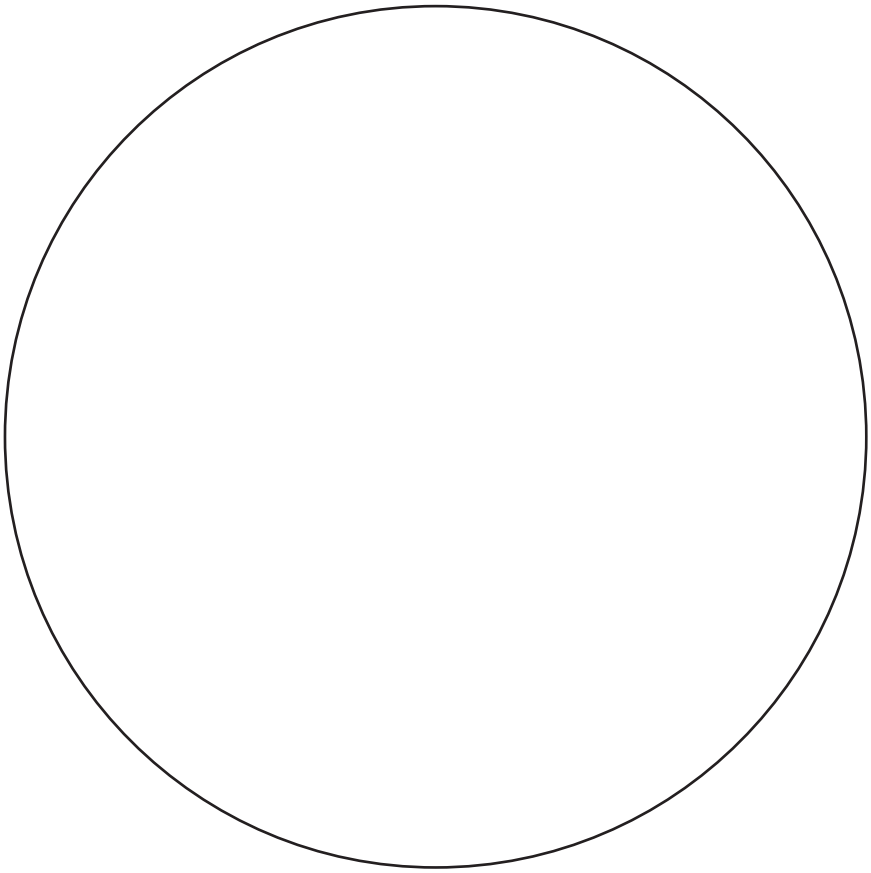
Dedication

For the most inspiring teacher I've ever
had the privilege to learn from,
Dr. Linda Silverman.



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Chapter One

Learning Styles Differentiation: Auditory-Sequential and Visual-Spatial

As a classroom teacher, you've probably been exposed to a number of theories on learning styles and perhaps several ideas about differentiation. Some approaches can be complicated and involve lengthy assessments to fully understand each student; others require a complete revamping of the curriculum you're currently using or that your school has previously approved; others keep changing and evolving so that just when you've learned how to apply the construct, the parameters change and you're left to start all over. You won't find anything like that within these pages, though. This is a differentiation strategy that is easy and fun to implement; it is essential for your visual-spatial learners and reinforcement for your auditory-sequential learners–and those are the only two learning styles involved!

One Internet definition of differentiation reads: "Differentiation is the adjustment of the teaching process according to the learning needs of the pupils," http://www.greenfield.durham.sch.uk/differentiation.htm. Also, from the same website, "The intent of differentiating instruction is to maximize each student's growth and individual success by meeting each student where he or she is, and assisting in the learning process."

I wrote this book because I want to share just how easy differentiating for students' learning styles can be. I was once a classroom teacher myself, I homeschooled for many years, and I've worked with teachers and schools in several countries. I know how challenging it is to try to meet the unique needs of each and every child. In her book, *Upside-Down Brilliance: The Visual-Spatial Learner*, Dr. Linda Silverman (2002) writes:

> Today's teachers must be superhuman and adapt to the children, instead of the other way around. To be a modern teacher, you must be part entertainer, part social worker, part special educator, part police officer, part ringmaster (to accommodate the range of abilities and learning styles and backgrounds and needs of all your students) and, oh yes, part enthusiast–knowledgeable of your subject matter and of the fine art of teaching. (p. 55.)

The concept of the visual-spatial learner, developed by Linda, Director of the Gifted Development Center, is based on the latest brain research and our current understanding surrounding the functions of the hemispheres. Linda coined the term "visual-spatial learner" in 1981 to define those students who think in images. While in the process of testing children's intelligence, she discovered a pattern among children who scored in the highest ranges. They did so with their phenomenal abilities to solve problems presented to them visually and by excelling in the spatial tasks of intelligence tests. Analyzing hundreds of children's test results, Linda observed two distinct learning styles: auditory-sequential and visual-spatial. Her theory boils down to this: We each have two hemispheres of the brain. However, much like handedness, many of us prefer one hemisphere to the other. That preference can have dramatic implications in the classroom. (It is important to note that both hemispheres work together to accomplish most cognitive tasks. It would be wrong and, in fact, silly, to conclude that a student is exclusively right-, or left-brained, functioning with only half a brain!)

School is geared to left-hemispheric learning. We teach in a step-by-step manner and require mastery of one area before progressing to a higher level. We also tend to teach, particularly in the higher grades, in a strictly auditory fashion, leaving manipulatives and hands-on learning for younger students only. Those who favor their right hemisphere are at a distinct disadvantage. Because they are presented with new

material in a sequential fashion, they are required to use their weaker hemisphere, rather than their stronger.

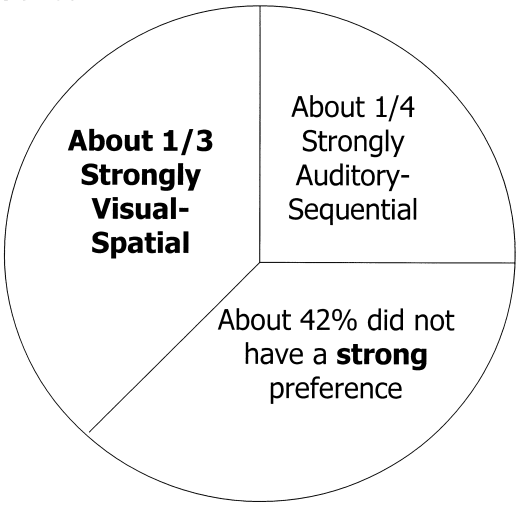
This is analogous to an individual breaking the arm of a dominant hand and being forced to handwrite with the weaker hand. Eventually, and with much practice, the individual will be able to produce legible writing, but it will never be the most efficient means, nor the most beautiful writing that he or she is capable of. Only when the ability of the dominant hand is returned, can the individual produce his or her best work. Schools were designed for right-handed students during the ages when left-handed students were FORCED to write with their right hands. Left-handedness was considered evil. We still meet people in workshops all across the country that were forced to use their right hands to write. My own grandmother, who was born completely deaf, said her biggest handicap in school wasn't that she couldn't hear, but that she was left-handed. Prejudice against our right hemisphere (which directs our left hand) continues in the emphasis on left-hemispheric educational practices. Only when we create classrooms that allow visual-spatial students to access the right hemisphere will we afford them the opportunity to produce their best work and learn in the most efficient manner for their learning style.

Understanding the specific learning style of your students and differentiating your instruction based on those learning styles may be the single most important aspect you uncover about them. To be able to teach to strengths may be a life-changing experience for them, one that will likely leave a lasting impression for the duration of their academic career and beyond. Our personal learning style affects not only how we learn while we are students, but also how we think and approach problem solving as adults. How one thinks and learns can dramatically affect one's personal and business relationships, too.

In the 1990s, research by the Gifted Development Center was validated using an instrument they developed, the

Visual-Spatial Identifier. The results surprised even those who designed and conducted the study.

Research from the Gifted Development Center shows:



Study included 4th, 5th, and 6th graders from urban and rural schools, white and Hispanic, from diverse socio-economic backgrounds and all IQ ranges.

The research included 750 students in grades four, five and six. The children were primarily Caucasian and Hispanic, from all socio-economic backgrounds and all IQ ranges, in an urban and rural setting.

The results demand the attention of every educator and administrator: Over one-third of the study group ***strongly*** preferred a visual-spatial learning style, while only one-fourth strongly preferred an auditory-sequential style. Of the group that did not lean strongly one way or the other, most favored a visual-spatial approach to their learning. This is an astonishing percentage of kids in the regular classroom and far more than was anticipated. Anecdotally, our research has found that the number of students who favor a visual-spatial learning style increases with intellect. In classes and schools for the gifted, we have found as much as 70-75% of the students had stronger right hemispheres than left. There is evidence to suggest that some of our most revered scientists,

inventors, musicians and thinkers are, or were, strongly visual-spatial.

> The words or the language, as they are written and spoken, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and… images… The above mentioned elements are, in my case, of visual and some of muscular type. Conventional words or other signs have to be sought for laboriously in a secondary stage… (Albert Einstein, quoted in J. Hadamard, *The Psychology of Invention in the Mathematical Field*, Princeton, NJ: Princeton University Press, 1949.)

There is even more compelling research than the numbers of visual-spatial learners in a classroom to support incorporating strategies that favor the right hemisphere: Engaging the right hemisphere is good for every student, regardless of their preferred learning style. That's right! By teaching to the visual-spatial students in the room, in ways that activate and engage the right hemisphere, you can more effectively reach **every single student**. Your differentiation strategy is as simple as addressing the right hemisphere of your students!

Dr. Jerre Levy, a brain researcher from the University of Chicago, who is credited (along with Dr. Roger Sperry) with discovering the specific functions of each hemisphere of the brain, is quoted:

> The right hemisphere is especially important in regulating attentional functions of both sides of the brain. Unless the right hemisphere is activated and engaged, attention is low and learning is poor. (Levy, in Silverman, 2002, p. 15)

Dr. Levy is referring to all students, not just those who prefer a visual-spatial learning style. In *A Whole New Mind: Moving From the Information Age to the Conceptual Age*, Daniel Pink writes:

> Cognitive neuroscientists at Drexel and Northwestern universities have found that the flashes of insight that precede, "Aha!" moments are accompanied by a large burst of neural activity in the brain's right hemisphere. However, when we work out problems in a more methodical L-Directed [left-hemispheric] way, this "eureka center" remains quiet. Our ability to activate this right hemisphere capacity has become more urgent as we transition out of the Information Age. (Pink, 2005, p. 134.)

So, what exactly constitutes a visual-spatial learning style versus an auditory-sequential learning style? And how do we teach in a manner that honors visual-spatial abilities, or "activates the right hemisphere"? That's just what I hope you'll discover in this book.

Visual-spatial learners, or VSLs, are people (kids and adults) who think in images. Auditory-sequential learners, or ASLs, think in words. If you're an auditory-sequential learner, as most of the teachers I've met and worked with are, I'll bet you can't even imagine thinking in pictures, right? The same is true for visual learners: they can't imagine being able to think in words! A few people can think in both pictures and words, or switch between the two, but that is rare.

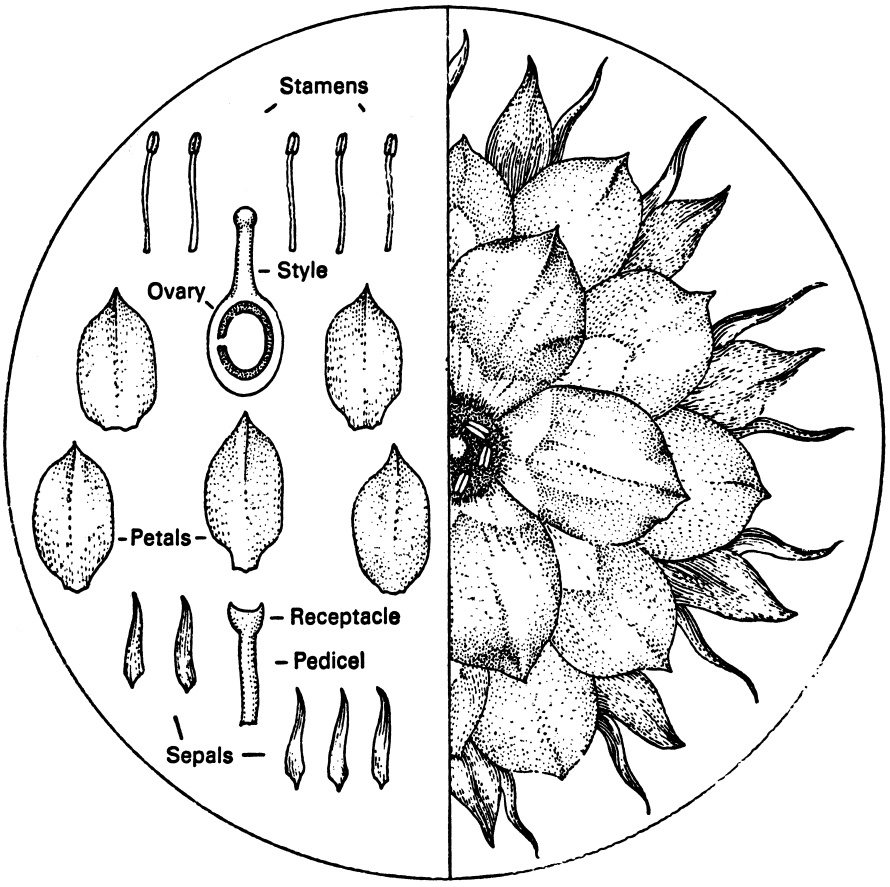
Can you guess which student below is visual-spatial and which is auditory-sequential?

Neither of the kids on the previous page is happier than the other, nor is either one doing anything more efficiently or accurately than the other. Certainly, neither is doing anything wrong. Each child is thinking and assembling in the manner that works best for him or her. One is putting the model together in a step-by-step, follow the directions style, the other is completing the project from a mental picture. There's no right or wrong way to complete the project just as there's no right or wrong way to think and learn. There is only what works best for each of your students.

Here's a quick overview of the two types of learners:

The Auditory-Sequential Learner	The Visual-Spatial Learner
Thinks mostly in words	Thinks mostly in pictures
Has auditory strengths	Has visual strengths
Is a step-by-step learner	Is a whole-part learner
Attends well to details	Sees the big picture
Follows oral directions well	Reads maps well
Does well at arithmetic	Does well at math reasoning
Learns phonics easily	Learns whole words easily
Can sound out spelling words	Can spell words by visualizing
Can write quickly and neatly	Can keyboard well
Can show steps of work easily	Arrives at correct solutions intuitively
Learns well from instructions	Develops own methods of problem solving
Is comfortable with one right answer	Likes problems with many possible answers
Is academically talented	Is creatively, technologically, mechanically, emotionally or spiritually talented

For those of you looking for a visual representation of the two hemispheres, I've not found a better illustration than this, from Linda VerLee Williams' book, *Teaching for the Two-Sided Mind: A Guide to Right Brain/Left Brain Education*:



Where the left hemisphere is able to analyze and understand all the parts, the right hemisphere comprehends the whole and is able to synthesize the parts into one cohesive image.

I've worked with visual-spatial kids from several different countries. Many tell me that their thoughts are like movies playing in their minds. Most of the kids I've talked to say their mental pictures are in color and have so much detail, they can almost reach out and touch them. Some students tell me how they store their mental pictures on shelves or in filing cabinets. One child's pictures move on a conveyer belt until he comes across the one he wants. One visual-spatial adult told me she has a chalkboard in her head that she uses to see her To Do lists. I've heard from others that they use

a mental whiteboard to envision spelling words and other information they want to recall.

That's just one of many tips and techniques I'll share with you in this book. Feel free to jump around to any chapter that has the information you need right now. If you need to help your students memorize their times tables, skip right now to Chapter 8. Spelling tests have your kids frustrated? Jump over to Chapter 6. Poke around and find what you need; there's no need to read this book in the order I've written it. I want this book to work for you, so use it as you see fit. Every reproducible is available on the CD, too, so whether you prefer the copier or the computer, you've got the material ready to go. (If you purchased a hard copy, the CD is glued to the inside front cover. If you downloaded this book, simply use your electronic version of each reproducible.)

This book is full of strategies to help you instruct your visual-spatial students (and, in doing so, reinforce the learning for every student!) in math, spelling, taking effective notes, creating written reports, using visual strategies to permanently learn new material, as well as getting and keeping your students organized in ways that are meaningful to them. Have fun discovering how your students' brains work! Then, honor your kids for the strengths they possess, no matter their preferred learning style. The auditory-sequential kids are traditionally rewarded with higher grades and an overall easier time of mastering school subjects. But the strengths of the visual-spatial students are truly gifts, as well. The careers of our future will rely on the skills and talents they were born with: the ability to dream, create, invent, compose and inspire–areas in which your VSL students were born to excel. In *A Whole New Mind*, Daniel Pink (2005) writes that the job market has already seen significant changes, changes that will only continue as we move away from the Information Age and into the Conceptual Age:

> In the US, the number of graphic designers has increased tenfold in a decade; graphic designers outnumber chemical engineers by four to one. Since 1970,

> the United States has 30% more people earning a living as writers and 50% more earning a living by composing or performing music… More Americans today work in arts, entertainment, and design than work as lawyers, accountants, and auditors. (p. 55.)

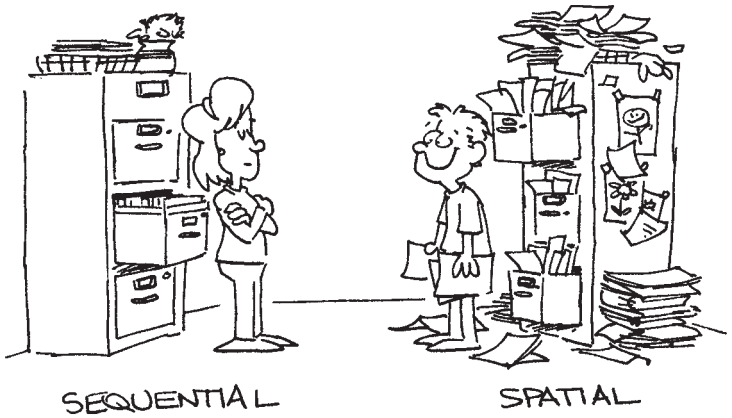
So what are we doing in today's classrooms to prepare students for this new Conceptual Age? Let's start by discovering the preferred learning style of each student.

Chapter Two

Finding the Visual-Spatial Kids in Your Classroom

You probably already know who the bright auditory-sequential kids in your classroom are. They're the ones who show up for class on time, with their homework and other supplies, and are eager and ready to learn. They often earn high marks in nearly every subject; they were able to memorize their math facts with seeming ease; they spell correctly; and their homework is neatly presented with no creases or tears in the paper and includes near perfect penmanship with no spelling, grammatical or punctuation errors. I'm not going to offer you ways to identify or reach these kids because our traditional left-hemispheric, step-by-step approach works just fine for this type of learner. But I do want you to have a clear picture of how to distinguish between the auditory-sequential learners and the visual-spatial learners in your room. Keep in mind, there is not a defined distinction between the two, rather a continuum on which many children fall strongly toward one end or the other. Similar to handedness, there is a significant percentage of the student body that prefers their right hemisphere to their left. It's for these kids that this book was written.

Here are some ways to discover which of your kids are visual-spatial:



The Pilers

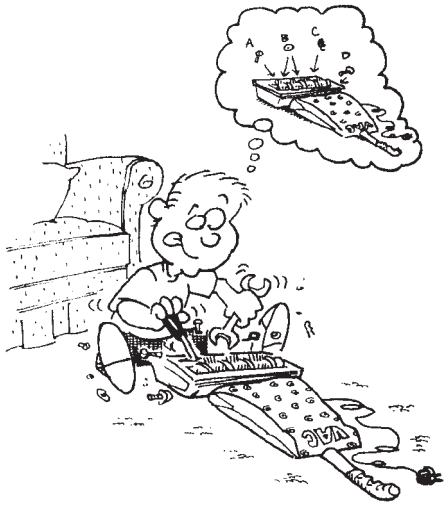
These are the kids that pile all their belongings, some horizontally, some vertically. They seldom "file" anything. In fact, to insist that they file and organize the way an auditory-sequential learner might do would cause them to never be able to find another homework assignment again! And *never* help the colleague who is a piler by organizing for him or her–even if you do have to share office space!

The Fidgeters

Visual-spatial kids typically are also kinesthetic learners, meaning they take in information through their senses. It can be quite challenging for them to sit still and this can cause them to have difficulty focusing on learning, so I suggest you let them move! This may sound counter-intuitive; traditionally, children were expected to be seated properly and at attention in order to learn. However, proper posture and attention are often at the expense of the visual-spatial child's ability to focus and retain information. In Chapter 11, we'll talk about strategies to keep your classroom from becoming too chaotic, yet honor the kinesthetic needs of some of your students.

The Tinkerers

These are the kids that love to take things apart to see how they work–while you hold your breath that they'll put it all back together again! For many, there is no intimidation about a computer or other equipment, they just seem to understand how to manipulate it, take it apart, or otherwise use it to their advantage. This cartoon is actually my husband who, at seven years old, rescued the family vacuum cleaner from the curbside trash pile, took it apart, cleaned it, oiled it and gave his mom a bill!



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The Daydreamers

Illustrated by Buck Jones, © Copyright held by Silverman, L.K. (2002) *Upside-Down Brilliance: The Visual-Spatial Learner Denver*: DeLeon Publishing. May not be reproduced without permission.

You know those kids who choose a seat at the back of the class, next to the window? Then, while you're in the middle of the most important lecture, you find them staring out into space, not paying attention to a word? Well, guess what? If they're visual-spatial learners, they're actually hanging on your every word, busily creating pictures in their minds to go

with what they are hearing. To ask them to turn their heads toward you would be to completely interrupt their learning. Because visual-spatial kids think in pictures, they must translate your words into the permanent mental images they will use later to recall that new information. For many, the only way to do that is to be focusing, visually, on something else so that auditorally, they can devote 100% of their attention on you.

> Distractibility and daydreaming during reading class may be…early indicators of creativity and innovative thinking, "symptoms" that will bolster her career as a scriptwriter or music video producer. A student's trouble understanding language may cause him to do much less of his thinking with words, as a result of which he strengthens his visual and spatial thinking, destined to serve him well two decades later in his career as a mechanical engineer… (Levine, 2002, *A Mind at a Time* p. 37.)

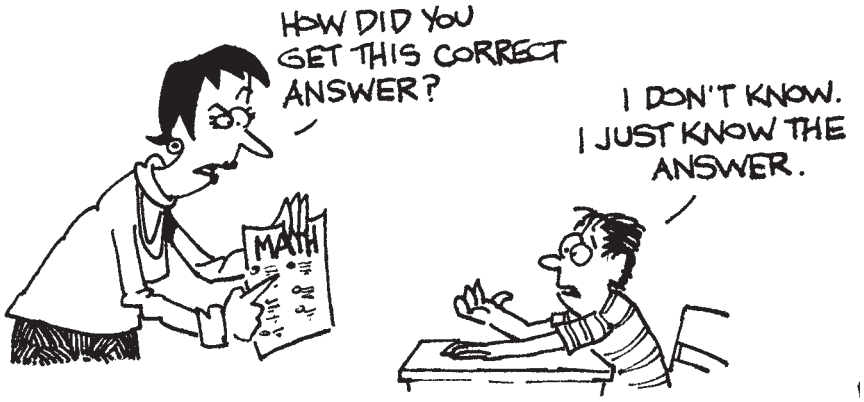
So how do you know the visual-spatials from the true daydreamers? Gently bring them into the conversation by asking what they've heard so far. Give them time to translate their images into words. Do their mental pictures match what you've been presenting? I'll bet your students will surprise you with just how well they really are listening. There are more tips to keep your visual-spatial students' attention during auditory lectures in Chapter 11.

The Imaginative Kids

> I think most VS girls play with dolls longer and more intensely than their non-VS counterparts do. E is 9 and most girls her age are not playing with dolls much; in fact, it's hard for her to find a friend who will play dolls with her. The girls who do seem to have VS traits. E creates all sorts of things for her dolls–she makes food out of clay for them, last night she made friendship necklaces for them. (K. C., *parent*)

Visual-spatial learners have very vivid imaginations, which lend to wonderful creative inventions, storytelling and so on. These are the kids whose imaginations will allow for the inventions and advanced technology that will one day take us to Mars or allow us to live on the moon!

The "*I Don't Know How I Know, I Just Know*" Kids



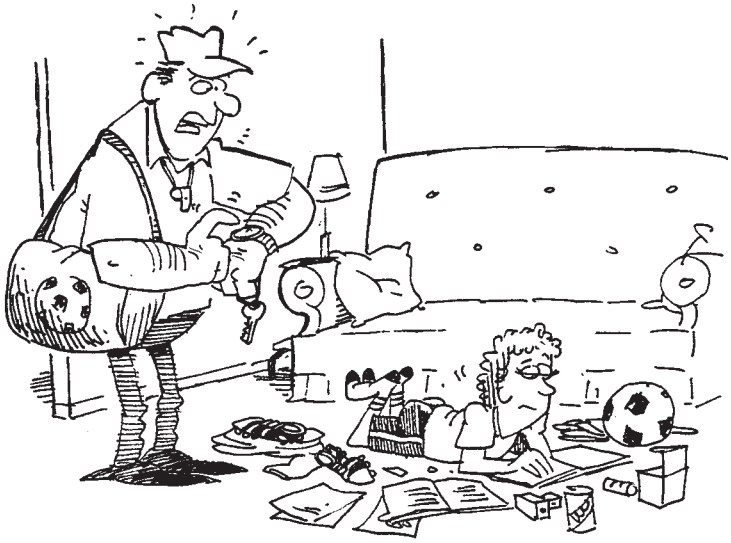
Visual-spatial learners are quite intuitive. This is especially true in math. Because they see the big picture, they often, and quite mysteriously, come up with correct answers to problems yet they are absolutely unable to show any steps to their work–there just aren't any steps to show! The most important message you can give them, as their teacher, is that you respect their way of thinking and that you don't, in any way, question how they got their answer. When there is mutual respect for how each other thinks, the student can often be asked to support his or her mental methods with more traditionally accepted, demonstrated work. In Chapter 8, you'll find ways to honor visual-spatial kids for their intuition and unique methods for obtaining answers, yet teach them to, "show their work," so they can always get full credit for right answers.

The Time Phobics

Most VSLs can't quickly translate their pictures into words (or numbers, if it's a math test) when they are under pressure

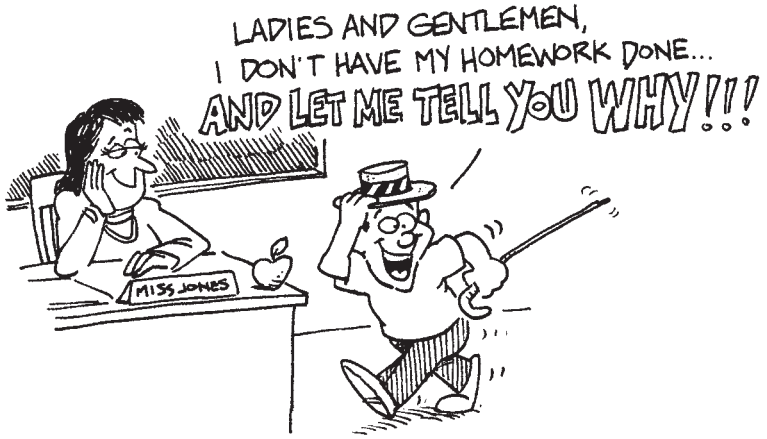
knowing they have a limited amount of time. I'll discuss some strategies for helping your students with timed tests in Chapter 12, The Dreaded Timed Test. In the meantime, get rid of those timed tests altogether! Timed tests were invented in the early part of the last century to create efficient factory workers who could repeat mundane tasks in quick order. Your students are not going to grow up and seek such jobs–those jobs have been replaced with robots and computer-guided equipment. It's time we stop preparing students for jobs of yesteryear by insisting they perfect skills that just aren't necessary for jobs in the 21st century.

The, "I'll be there in just a minute," Kids



Yeah, right! It appears to be a universal truth that visual-spatial kids and adults have absolutely no concept of the passage of time. So, "one minute" rarely equates to anything close to 60 seconds! So absorbed in creative play or the project of the moment, these students often resist transitioning from one subject to the next. And, with that noted lack of time comes no sense of how to plan for long-term assignments, either! We'll talk about helping your students understand the passage of time including how to plan for long-term assignments in Chapter 10, Organizational Skills.

The Humorous Creative Types



Humor resides in the right hemisphere of the brain. Most visual-spatial kids use it liberally. They come up with the funniest jokes, the greatest plays on words, and they're the first ones laughing at your puns.

You may find that some of your students fit more than one–or even all–of these categories. They're just farther to one end of the continuum than your other students and they're the ones that really need these differentiation strategies!

The VSL Quiz for Kids

Finally, here are some traits, in the form of a questionnaire, that are typical of visual-spatial learners. The first quiz presented is the VSL Quiz for Kids from the handbook, *If You Could See the Way I Think: A Handbook for Visual-Spatial Kids*. You're welcome to photocopy it and administer to your kids if you'd like (it's also on the CD!). The second quiz is one you can complete about your students. Please know that not every characteristic will fit every student. We each have two hemispheres and we require the use of both for nearly everything we do. As I mentioned earlier, the extent to which a student is auditory-sequential or visual-spatial lies somewhere on a continuum; some students are extremely visual-spatial while others only slightly so. But, just as most of us

Are You a Visual-Spatial Learner?

Please complete this quiz to find out more about how your brain works!

		Yes	No
1.	Do you think mainly in pictures instead of in words?		
2.	Are you good at solving puzzles or mazes?		
3.	Do you like to build with LEGOs™, K'Nex™, blocks, etc.?		
4.	Do you often lose track of time?		
5.	Do you know things without being able to tell how or why?		
6.	Do you remember how to get to places you have visited only once?		
7.	Can you feel what others are feeling?		
8.	Do you remember what you see and forget what you hear?		
9.	Do you solve problems in unusual ways?		
10.	Do you have a wild imagination?		
11.	Do you love music, dance, art or drama?		
12.	Can you see things in your mind's eye from different perspectives?		
13.	Do others think you are unorganized?		
14.	Do you love playing on the computer?		
15.	Do you have trouble spelling words correctly?		
16.	Do you like taking things apart to see how they work?		

If you answered ***yes*** to at least **nine** of the above questions, you are most likely a visual-spatial learner.

Is the Student a Visual-Spatial Learner?

Please complete this questionnaire to find out how your students' brains work!

		Yes	No
1.	Does the student think mainly in pictures instead of in words?		
2.	Is he/she good at solving puzzles or mazes?		
3.	Does he/she like to build with LEGO™, K'Nex™, blocks, etc.?		
4.	Does he/she often lose track of time?		
5.	Does he/she know things without being able to tell how or why?		
6.	Does he/she remember how to get to places visited only once?		
7.	Can he/she feel what others are feeling?		
8.	Does he/she remember what is seen and forget what is heard?		
9.	Does he/she solve problems in unusual ways?		
10.	Does he/she have a wild imagination?		
11.	Does he/she love music, dance, art or drama?		
12.	Can he/she see things in the mind's eye from different perspectives?		
13.	Do others think he/she is unorganized?		
14.	Does he/she love playing on the computer?		
15.	Does he/she have trouble spelling words correctly?		
16.	Does he/she like taking things apart to see how they work?		

If you answered ***yes*** to at least **nine** of the above questions, this student is most likely a visual-spatial learner.

are strongly right- or left-handed, most of us are strongly right- or left-hemispheric. You'll find more anecdotes and information about each of the questions following the quiz. It has been our experience that if a child answers "Yes" to nine or more questions, he or she is very likely a visual-spatial learner. (We also offer a validated instrument called the *Visual-Spatial Identifier*, the instrument used in our validated research noted in Chapter 1 and which is available at www.visualspatial.org.)

A student need not answer yes to all of the questions to be a VSL. You might find the following explanations and scenarios to each of the questions interesting. If your students had trouble answering any of the questions, read the appropriate parts within this chapter and see if the questions become easier or clearer for them. There will be varying degrees of visual-spatial abilities among the kids in your class. But, remember, creating a visual-spatial classroom will help every child, not just the visual-spatial students.

1. Do you think mainly in pictures instead of in words?

If your students are not sure whether they are thinking in pictures or words, try this trick: Ask them to spell their name backwards, or to spell your name, or to answer a simple question. As they answer, watch to see whether they look to their upper left or upper right while answering the question. Tell them not to look at you, but to "find" their answer, somewhere in space. A look to the upper left to "see" the answer means they are accessing the right hemisphere of the brain, where images are stored. A look to the upper right means they are using their left hemisphere, or at words not images. If they look straight up, they could be relying on both hemispheres. This is really a gift because they might be able to use either side of the brain depending on which strength they need. (We see this in gifted students, for example.) If they rely on the left hemisphere more (meaning they looked to the upper right when searching for the answer), they are likely auditory-sequential. If they use the right hemisphere more (meaning they looked to the upper left when searching for the

answer), they are likely visual-spatial. If they closed their eyes, go on to the next question! (Only a few of the kids I've worked with looked down, but I was still able to determine whether they had looked to their left or right.)

2. Are you good at solving puzzles or mazes?

Lots of VSL kids I know are amazing with all kinds of puzzles: jigsaw, three-dimensional, and others. I've heard stories of very young children turning the pieces to a jigsaw puzzle over so they could assemble them by the shape only, with the brown side facing up! Other parents have written that their children mix all the pieces of several puzzles together in order to make them more challenging. These kids can easily find their way through mazes (this is the child you want with you on the next field trip because they'll remember where you parked!), three-dimensional puzzles, and games like Tetris™, Rush Hour™, Shape by Shape™, and Tangrams.

3. Do you like to build with LEGO™, K'Nex™, blocks, etc.?

What type of learner do you think creates those spectacular LEGO™ sets? Gotta be a visual-spatial! The directions don't even come with words, only pictures! You need to be able to manipulate objects in your mind's eye in order to create all the amazing figures they come up with using a mix of squares and rectangles. The same is true with K'Nex™, Zome™, and other construction toys.

But these kids don't even need formal toys for creating–recycled towel rolls and some Scotch tape work just as well! I get stories from parents who have to ration the amount of tape their children are allowed each week because they are constantly building and creating with toilet

paper rolls, empty tissue boxes and whatever else they can get their hands on! I also hear from teachers who've learned to ask for such recyclables to be brought in for their art and science centers, saving them precious budget money on art supplies.

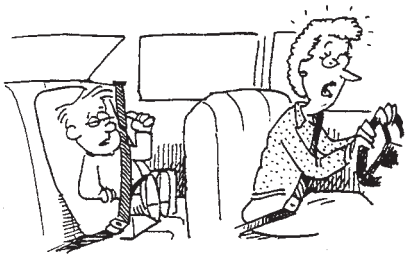
4. Do you often lose track of time?

These are the "*I'll be there in just a minute*" kids I wrote about earlier. They're the ones that offer this response, but then several minutes will pass and they haven't moved! Then they're scratching their head wondering why you're so upset when you only asked them to come a couple of seconds ago. I've mentioned before that most VSLs (kids and adults) don't have a very good idea about how time flies when they're having fun. Understanding how time passes may not be their strength, but understanding space is. When they're in a building, they are very aware of what room is directly above or below them. They can easily find the staircase or elevator in an unfamiliar building. I'll give you some strategies for helping teach time management in Chapter 10.

5. Do you know things without being able to tell how or why?

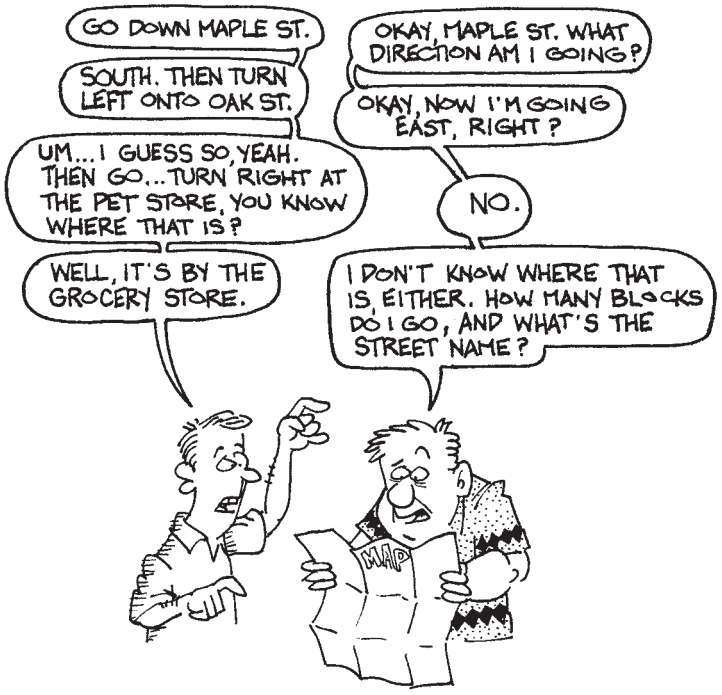
The kids that answer, "yes," to this feel almost as though they have extra-sensory perception or really great intuition. They just know how certain things work (like computers) or how to take something apart and fix it, even if they never have before. Most VSLs have pictures in their minds and they don't even know how those pictures got there. The best part is, the pictures are almost always right! And, because they're images, they are permanent and can easily be recalled.

6. Do you remember how to get to places you have visited only once?



A has always had an amazing sense of direction. When as a toddler he would say from his pram I was going the wrong way, initially you would ignore 'the silly baby' - it didn't take long to work out the amount of times 'the silly baby' was actually right! I learned to listen - so by age 5 I would trust him to find my car again in those giant supermarket car parks because invariably I would get lost. (J. M., *mum in Australia*.)

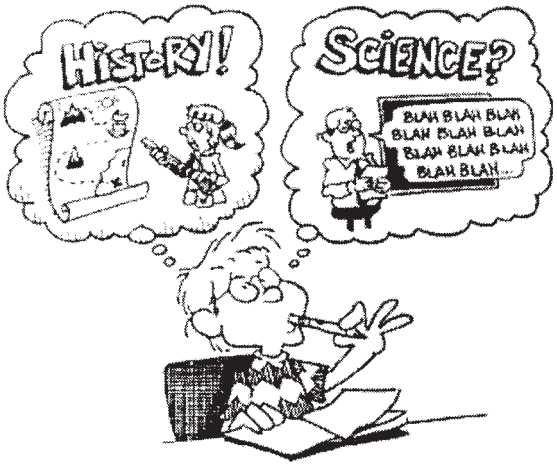
I've received several e-mails about children who seem to be pre-wired with Global Positioning Systems (GPS) in their brains. Whether it's from their stroller or the backseat, they pipe up with the correct direction, and they're usually right! Visual-spatial learners often find themselves wondering why others can't picture exactly how to get somewhere when the route seems obvious to them. But they're not the kind that can take a series of directions auditorally (like how to get somewhere, or how to complete an assignment) and remember all of it unless they've been able to create a mental picture, or see a map.



7. Can you feel what others are feeling?

These are the kids, even young preschoolers, who can walk into a room and immediately sense if their teacher or a fellow student is having a bad day. Lots of VSLs tell me that they just sense when someone needs a good hug. Many feel empathy toward animals, even insects, and have difficulty visiting zoos or other places where animals are enclosed. They will rescue a spider and take it outside rather than let another swat it. This is an incredible gift. The ability to read another person's emotions and respond appropriately will help these children throughout their lives.

8. Do you remember what you see and forget what you hear?



When listening to auditory lectures, visual-spatial kids are more likely to remember what was taught if there were overheads, maps or pictures used. Better yet is the use of hands-on activities such as experiments, creating time-lines, making mobiles of important facts, incorporating metaphors to relate learning to something your students already understand, using music to memorize new material, employing fantasy as a means of experiential learning, and providing direct experience opportunities (field trips, experiments, hands-on activities, etc.) whenever you can.

> One girl's parents commented to me perceptively, "She remembers things she's seen so much better than things she's heard. She is terrifically observant. She remembers what you're wearing and the expression on your face. She helps me find the car when we park in the garage at the mall. But then she instantly forgets a telephone message." …Kids need to make maximum

> use of their strongest pathway of input whenever possible. A child whose visual-spatial input is well received should try to do a lot of that kind of imaging… (Levine, 2002, *A Mind at a Time*, p. 97.)

This book is full of these types of strategies. I know you'll be impressed by how much your auditory-sequential students benefit from these techniques as well. You'll also enjoy how these techniques bring fun into every lesson!

9. Do you solve problems in unusual ways?

Visual-spatial learners naturally think outside the box, finding solutions that others rarely think of. They don't need anyone to teach them how to do that. I once met a ten-year-old visual-spatial girl who had begged her mom to save a large box. She said, "I need the box so I can think outside the box!" The ability to naturally think of creative and unusual ideas is a great talent. But many have to wait until college or a career to appreciate what a gift that is. Encourage your students to explore different routes to a solution then narrow

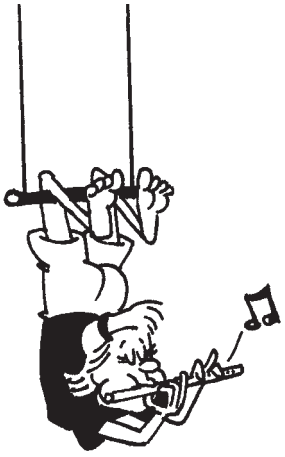
their methods to the most efficient. By teaching them to be open-minded in discovering ways to problem solve, you'll be tapping into their creative right hemispheres.

10. Do you have a wild imagination?

VSLs usually tell fantastic stories and they often enjoy role-playing games. Some can create mental images so real that they can feel, touch or even smell what they are imagining! It is their wonderful imagination that allows them to take common household items and turn them into new and fun inventions.

Many VSLs find joy and excitement in everything they do–even if it's something as simple as watching the bugs in the grass. But they become bored and tune out when listening to lectures. Some may call this daydreaming; others might think they have an attention issue. This book was written to help you guide your visual-spatial students toward using the stronger hemisphere of their brains, the right hemisphere, in everything they do. This is accomplished by incorporating humor, color, music, metaphors and other visual aids. I'll offer some specific tips for helping them stay focused in Chapter 11.

11. Do you love music, dance, art or drama?



Visual-spatial learners are often talented artists. Some find they love to paint or build, or that they love music, to play a musical instrument, to sing or to dance. Others enjoy pretending they are characters from books and movies. Still others express an appreciation for the arts. For most, paintings seem to call out to them and music truly moves them. They are typically art appreciators at an early age. So kindle this passion for the arts by including more of it in your lessons! A study of any period in history can readily include the art–even if it's cave paintings–of the era. The same is true with music. When I was a teacher, I incorporated large, visual timelines into history lessons that included the scientific breakthroughs, music and art of the period we were studying.

Students remember historical facts better when they are related. Understanding what the music, art or science that was going on during the reign of a particular monarch or term of a specific president can provide insight and offer connections for students.

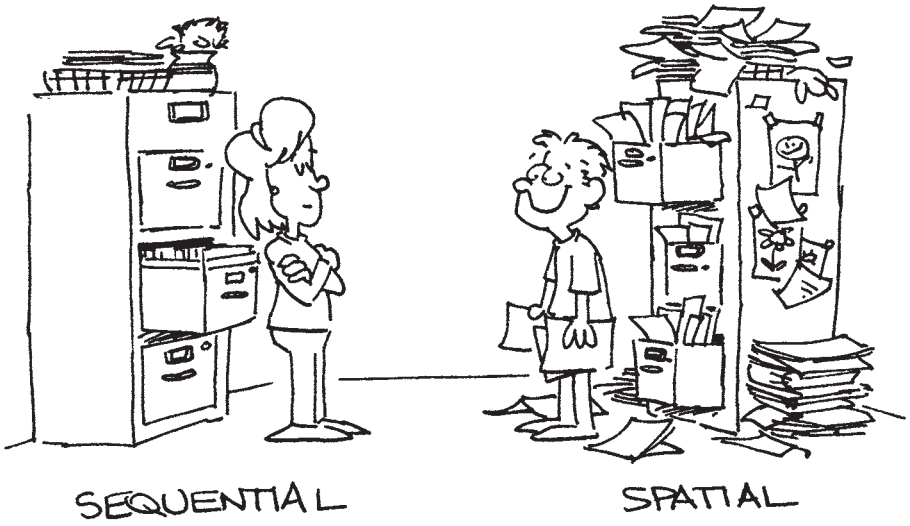
12. Can you see things from different perspectives?

When the student is looking at a picture of a building, can he imagine what the opposite side looks like? When she is in a two-story building, can she tell what room is directly above or below the room she is in?

> (E. is) also good at designing spaces. When my daughter was little she spent hours creating apartments, coffee shops and town houses for her Barbie dolls. What was different about her Barbie villages was their three dimensional quality. If you stood on a stool and looked down, the apartment was laid out like a floor plan, if that makes any sense. (K. C., *parent*)

The ability to turn things around or upside-down in one's mind can sometimes cause problems with reading and writing. The letters can roll and flip, mentally, so that one letter becomes another. Some visual-spatials have trouble because the letters p, b, d and q are the exact same shape. For those that have trouble handwriting because the letters turn and twist in their mind's eye, I highly recommend keyboard instruction, which I'll cover in Chapter 5. The letters p, b, d and q are all the same shape: a ball and a stick! But they're P, B, D, and Q on a keyboard so students don't mix them up. When students use keyboards, they're using both of their hands to write, which means both hemispheres of their brains are at work. Anything that keeps both hemispheres active helps them succeed! Also, if they are left-handed, keyboarding may be much easier because they won't be smudging their work anymore.

13. Do others think you are organizationally challenged?



Do your visual-spatial students keep their work area looking like the boy's filing cabinet? Are they able to find what they need when they need it? Lots of people think that the person on the right needs help getting organized. But, if he can find just what he needs when he needs it, then his organization works just fine for him. Now, if your students can't locate their homework assignments, or they're losing other important things, then they do need some help with organization. We'll talk about specific organization strategies in Chapter 10.

14. Do you love playing on the computer?

Almost all VSLs have a love affair with their computers. They can manipulate the computer in ways that others just can't figure out. (They're the kids you want helping you install new software or setting up e-mail accounts!) This is because computers were invented by visual-spatial

learners for visual-spatial learners! Only VSLs could think up all the possibilities that computers and computer games offer. When you have a strong right hemisphere, which VSLs do, you intuitively understand, or can quickly learn, how to operate computers. One middle school teacher I know has his students do everything on the computer. Even parents are notified of assignments via daily e-mail announcements. It's pretty difficult to lose your paper (or claim the dog ate it) when it's on your laptop!

15. Do you have trouble spelling correctly?

Spelling has been taught for generations in a sequential manner with odd rules. Who can possibly remember when "i" comes before "e"–especially if the rule is broken so many times? One student had to repeat the word "species" on his spelling list week after week because he dutifully remembered that rule and consistently misspelled it, "speceis!" Our written language makes little or no sense, particularly to one who thinks in images, not words. In Chapter 6, I'll show you ways to help teach spelling words as images so that your visual-spatial students can start acing their spelling tests.

16. Do you like taking things apart to see how they work?

Most VSLs have an insatiable curiosity to understand how everything works–from telephones to toasters to computers! Whenever something stops working in my house, I wait until everyone has had a chance to tinker with it before I replace it. These kids are builders and inventors, too. A supply of recyclable materials and some Scotch tape are often all you need in an invention center or discovery zone! Here's what one mother of a visual-spatial girl wrote me:

> … I think her VS traits show up in ways that don't fit the general description. She loves to design and take things apart but not mechanical stuff. She takes apart her lip gloss and wants to understand the components in make up which requires studying chemistry. (K. C., *parent*)

The results

Now, have your students add up all the questions they answered, "Yes," and, "No," to. If they have nine or more answered, "Yes," they are probably visual-spatial learners! Take a look at how many VSLs you have in your class, I've included a chart for you to log your students on the next page. Are you surprised at the kids who prefer this learning style? Are you surprised by how strongly some are visual-spatial? I once administered this quiz to a class at a private school for gifted children and the teacher was quite stunned–a full 80% of his class was strongly visual-spatial!

Now, consider grouping your students by learning style for specific tasks or subjects. For example, you could group the strongly and moderately visual-spatial students together to work on discovering methods of simple division while you teach the auditory-sequential students the traditional, step-by-step manner. Or, you could combine students into teams of auditory-sequential learners and visual-spatial learners to do group reports. The auditory-sequential students could be responsible for the written aspect of the report, while the visual-spatial students could produce the corresponding maps, dioramas, or costumes. There are a number of ways you can group students together, based on their learning styles, that will help engage every learner and allow them to succeed. The added bonus is that each student will then be exposed to the type of cooperative learning and team building necessary in their future career. Few successful adults achieve great levels entirely on their own. Most rely on aides, editors, secretaries, and other types of assistants who play a vital role in the team's success.

Where do we go from here?

Since the creation of modern school, teachers and curricula have been teaching to the left hemisphere, in step-by-step directions with material that builds on previous learning. This is an approach that leaves visual-spatial learners out in the cold. For VSLs, the left hemisphere can never become as

VSL Quiz for Kids Results

Use this log to record those students who appear strongly, moderately or mildly visual-spatial versus those students who appear strongly, moderately or mildly auditory-sequential. This will make grouping students who learn similarly easier.

Strongly Visual-Spatial Students (14-16 "Yes" responses; 0-2 "No" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

Moderately Visual-Spatial Students (11-13 "Yes" responses; 3-5 "No" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

Mildly Visual-Spatial Students (9-10 "Yes" responses; 6-7 "No" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

Strongly Auditory-Sequential Students (14-16 "No" responses; 0-2 "Yes" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

Moderately Auditory-Sequential Students (11-13 "No" responses; 3-5 "Yes" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

Mildly Auditory-Sequential Students (9-10 "No" responses; 6-7 "Yes" responses)

_____ _____ _____

_____ _____ _____

_____ _____ _____

efficient or successful as the right hemisphere. The right is just simply stronger for them. The comparison of a right-handed person breaking the right arm is worth repeating. Certainly, right-handers can learn to write legibly with their left hand, but it will never be as comfortable or efficient, nor will it ever be as legible as what they are capable of producing with their right hand. This is what we've done to right-hemispheric thinkers for centuries. It's time to stop insisting that those with stronger right hemispheres rely solely on their left for learning and retaining new material.

For many VSLs the traditional classroom presents a real challenge. Schools were designed for auditory-sequential learners. Auditory-sequential learners remember what they hear, we teach by talking. They love learning new material that builds on what they've already mastered, we teach following the same approach. School is a perfect fit for the auditory-sequential learner. But, there's no reason it can't also be a perfect fit for the visual-spatial learner, as well.

> Learning does not occur in classrooms; it occurs in students' minds. The role of the teacher and the classroom he creates is to offer possibilities in such a way that students will both want and be able to learn. The richer the banquet we lay, the more students will partake and the longer they will stay at the table. (Williams, 1983, p. 194.)

You can probably think of at least one visual-spatial student who is falling through the cracks, academically. You have the opportunity to save that student. Armed with an understanding of how the brain of a visual-spatial learner is wired, combined with a willingness to honor that learning style, these children no longer have to feel inferior to their auditory-sequential classmates.

In *A Mind at a Time*, Mel Levine (2002) writes:

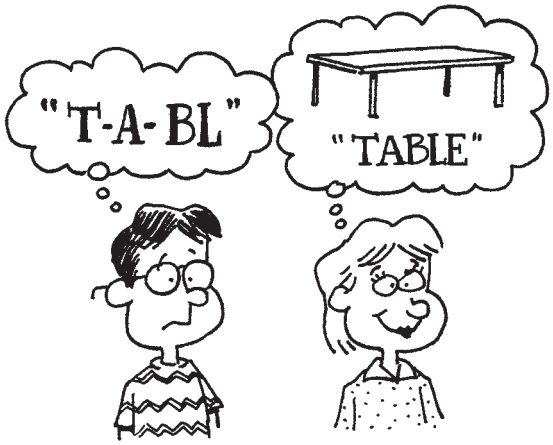
> It's taken for granted in adult society that we cannot all be… skilled in every area of learning and mastery. Nevertheless, we apply tremendous pressure on our

> children to be good at *everything*. Every day they are expected to shine in math, reading, writing, speaking, spelling, memorization, comprehension, problem solving, socialization, athletics, and following verbal directions. (p. 23.)

It is critical that, as teachers, we honor these students for their strengths and not penalize them for the way in which their brains are wired. The 21st century is an amazing time to be a visual-spatial learner. The gifts these children were born with will allow them to become great surgeons or design beautiful buildings or compose moving music or create exciting computer games or design computer-animated movies or become a musician, artist or dancer. School is an important pathway for reaching those goals. Surgeons, architects, engineers, designers, composers and artists go through many years of school so that they can qualify for these jobs. Visual-spatial learners, teamed with compassionate teachers to guide them, can make school work to their advantage.

Chapter Three

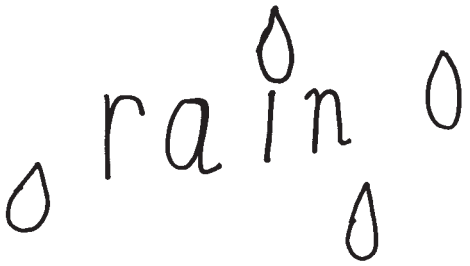
Reading



Being taught to read is often a visual-spatial learner's first exposure to true left-hemispheric instruction. Most schools and teachers use a phonetic approach to reading. However, many visual-spatials can only learn to read using a whole word, or sight word, method. VSLs have a hard time with phonics because it breaks down words into the smallest sounds, like: ra, ta, ga, and fa. Then, the beginning reader is supposed to build on those small sounds to form whole words. Visual-spatials understand big picture information first, not the smallest details! Because VSLs think in pictures, they need to read in pictures. What is the picture of "ga"? Or of "the?" *Can you create a mental picture of "the"*? When VSLs are taught to read by looking at whole words first, not the smallest sounds, they can make pictures for those words and learn them more easily. "Disneyland," and, "xylophone," are easier to read (and spell) than, "the," or, "and." There is shape and distinction to them, but not to the smaller, simpler words.

Some words just naturally make you think of a picture because of the shape the letters make (like the letters "M" and "N" do in the word MouNtaiN) or because of the meaning of the word.

Or rain when you add a raindrop to dot the "i":



Your students can probably think of many more ways to draw words that include pictures. They can even use different fonts that correspond with the word as described in the spelling techniques in Chapter 6. There are many words for which they cannot create a picture to represent: "an," or "the," for example. Your students can still make a picture of the word by shaping it out of string, Wikki Stix, or clay. Some schools use letters made out of sandpaper so you can trace over the shape of the letter with your finger.

Whole words can be placed on cards and hung from a key chain or stored in a special word box. Then, the beginning reader can practice sorting all the words with similar starting sounds, similar ending sounds or other categories they think up. This is called analytic phonics and will help any reader become even better. There isn't always a single right answer to learning something and phonics certainly doesn't work for every student. For more on this, please see Betty Maxwell's article, *Wholes and Patterns: Reading Help for Struggling Gifted Visual-Spatial Learners*, which can be found on the Visual-Spatial Resource website at www.visualspatial.org/Articles/wholes.pdf.

Speed reading

I have one huge tip for visual-spatial students about reading: speed read! Just like beginning readers have no need for the words "the," "and," "or," and so on, older readers aren't creating pictures for these words, either. So, they should just skip them! Teach them to practice running a finger, very quickly, over one line of words, then the next. They should jump right over the words that their minds don't make a picture for. Most speed readers use their index finger to race under the lines of text as they read.

Here's an example of how to skip picture-less words. First, read this sentence:

> Then, on the following morning, Jody ran to the nearby grocery store to fetch a gallon of fresh milk for his mother.

Now, watch how much easier it is to read this sentence by skipping over the words that have no mental picture, reading only the words that create an image in your mind:

> Morning, Jody ran store milk mother.

Can you do it? Can you skip the picture-less words? Was it easier? Are you missing any facts from the first sentence? Does the sentence with much fewer words still create a picture in your mind of what the character is doing, when

and for whom? You don't even need the adjective "fresh" because you know he's buying the milk that morning, right? If you are a picture thinker it's easier to make a mental picture when you don't have to stop and read the picture-less words. This technique won't affect comprehension because the reader is only eliminating the words for which there is no picture to represent and were not going to recall, anyway. It actually serves to increase comprehension because now, the student can focus exclusively on creating pictures for what is being read, mental pictures that can later be recalled with increased accuracy because they are no longer spending frustrating study time with picture-less words.

Students, especially visual-spatial students, need to be encouraged to create mental images of what they are reading in order for recall and comprehension. Many of them have such difficulty decoding the words that they forget to simultaneously create mental pictures.

> …training students to generate mental images as they read can substantially improve reading comprehension. Teachers or aides show students how to identify key words which will help make a mental image and encourage the children to use those words to generate images. Gains in reading comprehension from this nine-week program almost tripled prior yearly average gains. Recall was twelve times greater than previous yearly gains, and while improvements in speed and accuracy were less dramatic, those scores doubled over the previous year's. (Williams, 1983, p. 109 citing Marjorie Pressley, et.al., *The Mind's Eye*, Escondido, CA: Escondido Union School District Board of Education, 1979.)

If your students need help remembering the pictures they are creating in their minds, they should be encouraged to keep "notes," actually drawings, of what they are reading. They can do this in the margins, if the book is their own, or in a separate notebook, if it is not. Critical information, such as the plot of the story or dates of information or names of

characters they are studying, should be included in the drawings. I'll show you more in Chapter 7.

> Picture at Punctuation is the best technique I have seen for improving comprehension skill… When they come to a comma, period, exclamation mark, question mark, dash, colon, or semi-colon the stop reading and tell me what they are picturing in their minds about what is happening in the story…
>
> What makes this comprehension technique so good is it uses their strength of making mental pictures. I'm not drilling them with questions they might not be able to correctly process, I'm simply saying, "Tell me your picture." (From J. Ringle on the techniques of Ron Davis, *The Gift of Dyslexia*, pp. 13-14, from Silverman, 2002, p. 292.)

Reading for important information

There are plenty of hints in our textbooks to indicate that the reader has stumbled upon important information. New words they are expected to recall later are often in bold print, important information is often represented in a graph, diagram or other visual as well as provided in the text, and subheadings often guide the reader for a good overview of the material.

One fun and effective technique for demonstrating to students how to be aware of important information within their reading is to do a "Textbook Scavenger Hunt" at the beginning of the school year. In a Textbook Scavenger Hunt, you ask students to seek general and specific information from various chapters, the glossary, the index and other areas. The hunt through various chapters and other sections gives the student an overview of what the text covers and what they will be exposed to during the course of the school year. I've found it an excellent introduction to the material, particularly for visual-spatial learners who can then make connections when new material is being presented. They'll remember, for example, that the class is going to cover

certain aspects of the timeline in history because they visited that chapter, however briefly, at the first of the school year. Making connections helps VSLs retain what they are hearing and reading.

When I was in school, I used to fold the corners of any pages that had names, dates and other important information. Today, there are so many great products available at office supply stores that students don't need to damage their books. Post-It tabs in a variety of colors fill this need far better than corner folding! Teach your students to use different colored tabs for different information: maybe green tabs are for dates they must remember, blue tabs are important names and red tabs are new words. Don't dictate what the colors mean, rather, let each student determine what color-coding system works best. The tabs can be stuck right on the specific line of text that contains the information. Show your students how to have just the colored tab area sticking off the page for easy reference.

One more note about reading

For students who have difficulty reading, or who read slowly, consider incorporating comic books or fantasy books with lots of visuals. Perhaps books on something the child is really interested in, a favorite animal or another country, or something appealing enough to keep trying to hone reading skills. You might also consider having them check out recorded books from a library. Being read to enables the student to learn the vocabulary and allows the visual-spatial student to create the mental images necessary to be able to recall the story in accurate detail.

Many visual-spatial children are late readers. Some have difficulty tracking a line of print. My own son surprised his teachers and parents when he was randomly selected to demonstrate a vision-tracking instrument for his school. His comprehension was significantly above grade-level and no adult in his life suspected he had a tracking issue, but it turned out that each of his eyes was reading a different line

of text–simultaneously! Six months of vision therapy corrected this issue and usually does for kids with this problem. Providing books with a larger print size may be a consideration as well. This is often easier on a student's eyes. Some kids find reading easier when they use a colored transparency, like yellow or green, and place that over the page. Finally, there are high interest books available from Barrington Stoke Publications that are printed on special paper using a font with an extra half space between letters that has been proven easier to read for dyslexics. You can find these at www.BarringtonStoke.co.uk.

Other VSLs are delayed in their reading skills because they receive only phonetic instruction. But nearly every visual-spatial learner has a strong desire to read, particularly in his or her quest to learn how things work. You have the opportunity to help your beginning readers crack the code by providing visual instruction in the form of a whole word/sight word approach.

Chapter Four

Writing

Creative Writing

Creative writing is one of the many gifts of being visual-spatial. These children have a wild imagination coupled with a great sense of humor! They often come up with wonderfully elaborate, detailed stories. But, when it comes to getting them on paper, what they produce often employs vocabulary several grade levels below what you know they're capable of writing. For some, the challenge is in the organization of their numerous mental images. For others, the difficulty is in translating mental images into words and then handwriting them neatly. For others, it's knowing they will fail at the spelling, grammar or punctuation that causes them to freeze or under perform.

> When a student writes, she or he has to synchronize letter formation (or keyboarding), spelling, punctuation, grammar, capitalization, prior knowledge, and vocabulary. All of these output tributaries have to flow into the main river at about the same rate. A budding writer can't have the punctuation arriving eleven seconds after the capitalization. Difficulty achieving the required degree of synchronization is one reason many students…find writing to be a form of cruel and unusual punishment. (Levine, 2002, p. 80.)

I tell parents and teachers who are not visual-spatial learners to do this exercise: Imagine you are watching a movie that incorporates large doses of color, images and emotion. Numerous pictures are flashing quickly before you. Now, stop and write down, in words, all that you see, feel and sense in a logical, sequential report. Most people, even sequential thinkers, can't do it. Students are often asked to write all that they see in their mind's eye. If a "picture is worth a thousand words," and they think in thousands of

pictures, how are they to find just the words needed for any story or report? For many visual-spatial students, it is an impossible task. Writing becomes an assignment they dread. And so, we see assignments submitted that don't even begin to include all of the details that were in these student's mental pictures, or what they were able to tell us verbally.

I have some tips to help your visual-spatial students successfully put on paper all their creative ideas. So often, the visual-spatial student has a fabulous idea for a creative story, but shortly after putting pencil to paper, the student gets lost or halts completely, not sure how to proceed because they've lost their mental picture. For many students, if they draw out their mental pictures then return later to writing the words that correspond to those pictures, they don't lose their stories. When the pictures are down first, it's easier to remember where the story was headed.

Allow dictation. Because images often flow faster and more vividly than visual-spatial students can write or type, allow them to dictate all or part of their work to someone else. First, they dictate the ideas. Then, they review their unedited ideas and edit as much as they can (with the help of spell-check and grammar check). Visual-spatial students should be encouraged to learn keyboarding skills early on, as discussed in Chapter 5, because typing, once they are proficient, will be a much faster means of getting their stories on paper than handwriting.

Consider giving weight to other aspects of a creative writing project. For example, allow your students to create costumes, a storyboard, or a model to go with their stories and give credit to them for these efforts. Or try any one of the other ideas you'll find listed in "Alternative Assignments" at the end of this chapter. This will allow visual-spatial students a chance to show off their talents in creating wonderful accompaniments to their stories. Credit for their extra time and effort can offset the fact that they are often unable to produce a written story free of spelling and grammatical

errors. Please also consider grading the content of your students' ideas separate from the penmanship and mechanics.

I want to let you know about another strategy you can try in the classroom, particularly for reluctant writers. Miriam Darnell, a talented language arts teacher in Lafayette, Colorado, created a fantasy game that has successfully lured even the most reluctant writers into creating fabulous tales, even poetry, and put them to paper. The game, Legends of Druidawn®, appeals to children and teens of all ages and is fun and easy to incorporate in the classroom. You can learn more by visiting Miriam's website at: http://www.creative-writing-solutions.com/kid-writings-druidawn.html.

Other types of written assignments

Many visual-spatial students have difficulty with written assignments, especially reports. But there are a number of alternative assignments you can offer that allow your students to demonstrate what they've read and learned. I've included a list of some possibilities for you to consider at the end of this chapter.

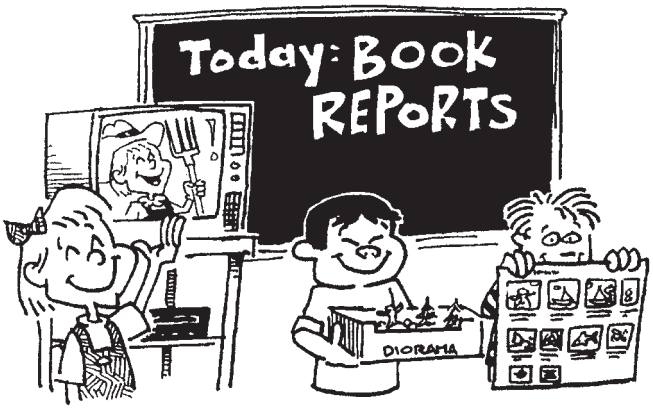
For starters, let's suppose the assignment is to write a book report. What other ways can students exhibit they have read and understood the book besides writing a two-page report? Thinking outside the box comes naturally for these kids; ask them to come up with projects that display their knowledge. What about a videotaped Interview With the Author? The student could act as a news reporter and include the important aspects of any well-written book report (the plot, the main characters, the climax of the story, even some information about the author, or the inspiration for the story) in an entertaining format. It would be interesting to create and it would certainly demonstrate knowledge of the book.

> I expected Mr. Williams [English teacher at an all-boys' school] to assign (an essay) to his boys. After all, that's the way *Lord of the Flies* is usually taught, according to the many study guides available for this book. But that's

not what Mr. Williams did. "Let's see your maps," he said. Mr. Williams had given the boys a very different assignment: prepare a three-dimensional map of the island.

Making a map of the island is not an easy assignment. There's no map in the book. The island does have many unique features, but how to make a map?

As these boys learned firsthand, you can use the book to construct an accurate map, but only if you read the text with care. For instance, in the closing chapter you'll find the sentence, "The sunlight was slanting now into the palms by the wrecked shelter." You know that the wrecked shelter is near the beach. It's late in the evening. Knowing that the sun sets in the west, you deduce that if the beach were on the east side of the island, it wouldn't be possible for sunlight to be slanting into the palms late in the evening because the forest would block the sunlight. The beach can't be on the south side of the island; if it were, the mountain would block the sunlight. Nor can it be on the north side of the island, or the forest would block the sunlight. The beach has to be on the west side of the island. (Leonard Sax, *Why Gender Matters*, p. 109.)



How about a diorama that shows the conflict or the climax of the story? What about making a mini-film of the main

events? Or, perhaps a storyboard or a cartoon book? Can your students write a musical based on the book? How about designing a board game around certain events in the book? If the story took place during a specific time in history, can the student design costumed paper dolls to recreate the main scenes?

Now, let's suppose the assignment is to research a famous person in history. John Martin, a popular Middle School teacher at Rocky Mountain School for the Gifted & Creative in Boulder, Colorado, asked his students to select a famous scientist from the 1600s. The students were asked to:

- Draw a headstone for their famous scientist's grave. (This required researching the scientist's birth date, date of death and writing an interesting, appropriate epitaph. It also included art!)
- Create a birth certificate. (This required researching the parents' names, place and date of birth.)
- Create a timeline of events, including the scientist's contributions, as well as other important political events, inventions, music and art of the era, etc. (This allowed the student to see what was happening in the world at the same time the scientist lived.)
- Create a business card for the scientist. (This required an understanding of the profession, the scientist's education and accomplishments, and finding out where the scientist lived or studied. It also included an art component.)
- Write a letter to a head of state (king, queen, president, etc.) requesting funding to continue research. (The student had to research who was in power at the time and produce a creative plea!)
- Write a newspaper article interviewing the scientist about his or her work.

There were other parts of the assignment, but my point is that this teacher understood the importance of including activities that used both hemispheres of the brain to demonstrate what his students had learned. The research and writing he asked for meant his students had to rely on their left hemisphere to take notes, keep them organized and write logically. The art and timeline and creative thinking he solicited had his students using their right hemispheres to see the big picture and add fun and interest to the complete report.

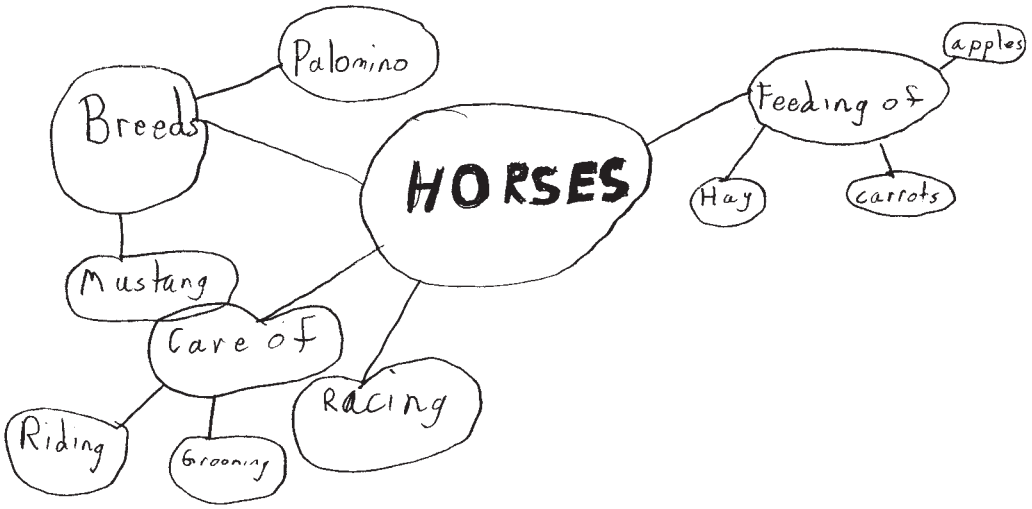
By making the project interesting for his students, Mr. Martin was successful in turning what might have been a dreaded research paper into a fun project. It was probably also more enjoyable for him to review than old-fashioned reports would have been!

There are countless ways that visual-spatial learners can show that they have read the material, understood the main ideas and are prepared to report on their learning. It doesn't always have to be a written report. Any project that allows them to incorporate visuals, music, color and/or humor engages the right hemisphere and calls upon their strongest suit. Making students winners is a win/win for everyone!
I hope you'll check out the list of "Alternative Assignments" that follows this chapter. Allowing alternative assignments may mean some flexibility in evaluation on your part. Some of your students may be happy to produce a standard written book report or research paper, so you will not be comparing apples to apples if other students select a more creative approach to demonstrating their knowledge. I would encourage you to employ a contract with each of your students that includes what format they have selected, either written book report or creative alternative or a mix of each, what you expect them to accomplish in producing their report or project and the grade they can earn based on what they submit.

Report writing

There will be times, however, when a standard written report must be assigned. Given the current status of the SAT with its timed essay requirement, it would behoove your students to be able to successfully organize their thoughts and create written output commensurate with their vivid mental images. To do so requires the visual-spatial student to begin with a lesson in organization. Visual-spatial students can discover successful strategies for creating written stories and reports by using a tape recorder or jotting their ideas in a "web," or designating colored note cards or employing specialized software to get their mental pictures down on paper. Some of the kids I work with have no trouble telling someone everything that would be included in a report. It's the act of writing that causes them to freeze. So why not let them dictate a report into a tape recorder, then write down what they've said? They can play back the tape and add more as they write, but at least they'll have a starting point.

Webbing is a strategy of getting all the ideas for a particular subject on paper, then building from those ideas. For example, suppose the assignment is to research and write a report about a favorite animal. Teach your kids to start the process by creating a web. Because VSLs naturally think about big picture ideas first, a web should be easier to create than a standard outline, which starts with small details and builds to a big picture. When they start creating a web, they should be allowed to brainstorm all the related ideas they can think up. No idea is silly or should be thrown out at this stage. A typical web might look something like this:



It is standard procedure to request an outline prior to the writing of a full report. As teachers, many of us were taught that the first part of writing a report is to put down all of the ideas in an organized format. But visual-spatial learners don't think like that! They see the big picture first and then the small details, so writing an outline first is torture!

In the web above, an outline would be created with the largest circle, "Horses," as our main subject. The sub-headings would include "feeding of," “breeds," "care of" and “racing.” With sub-sub-headings as “apples,” "hay," "carrots," "mustang," "palomino," etc. The finished outline might look like this:

I. Horses
   - A. Feeding of
     1. apples
     2. hay
     3. carrots
   - B. Breeds
     1. mustang
     2. palomino
   - C. Care of
     1. riding
     2. grooming
   - D. Racing

If creating an outline from their web doesn't work, VSLs can try software including, Inspiration® or Kidspiration®, that allows students to visually create an outline and let the program generate a standard outline from their information. Or, students should be allowed to write the report first and then generate an outline from the finished report. This may require some flexibility on your part, as students choosing this route should not be expected to complete the report in the same time others are drafting only an outline.

The next step in creating their finished reports is to encourage your students to watch videos, visit related sites on the Internet, talk to a specialist (perhaps a veterinarian in this case) and read books to gather information on each of the areas necessary for the final report. They should take notes on everything they learn. The notes might be more useful to them if they write them on color-coded index cards. For example, in our example of a report on horses, they might use green index cards for any information learned about feeding horses. They might choose yellow cards for the information researched about various breeds of horses. Keep in mind that "notes" don't have to be written words. If your students think in pictures, it will be more meaningful for them to take their notes in pictures. These could be actual drawings of what they have learned. For example, they could draw pictures of what horses eat, rather than writing the words, "hay," "carrots," and "apples." Hand-drawn images of what horses eat may be easier for them to recall than written words.

The final step is to show your students how to gather all of their completed note cards. They should be in order by color so that all the information about how to care for horses is together and all the information about breeds of horses is together, and so on. The grouped cards should be in order according to the outline created from the web. The report can then be written directly from the note cards with all the facts organized together, by color.

Proofreading

> Another thing that makes my daughter different, I think from her audio-sequential counterparts is that girls are supposed to be good at language arts. They are good spellers and writers. They tend to be good readers and quick talkers. My daughter isn't. Her spelling, handwriting and grammar (in written work) is terrible. (K. C., *parent*)

When students begin actually constructing their written assignments, they should not worry about grammar, spelling or punctuation. Those can each be addressed once the rough draft is written. The first priority is to get the students' pictures into words and onto paper. After creating the rough draft, students should go through their reports looking only for spelling errors. If the report was typed on a computer, they should use spell-check to help, but they must be taught to beware of homonyms! Once they've corrected any spelling mistakes, have them go through the draft again looking only for punctuation errors. Then, they should review the report again, looking only for any grammatical corrections. Don't ask your students to try to catch everything the first time they read through a rough draft–there's too much to look for and potentially have to change. Finally, have your students ask someone to help proofread for homonyms, missed words, etc. Even the finest writers have editors because we all need a second pair of eyes to review our work.

Alternative Assignments to Book Reports

- Videotape an Interview with the Author or act as a movie/book critic. Be sure to include a discussion of the book's plot, main characters, setting, conflict and resolution.
- Build a diorama of the characters depicting the conflict or climax of the story.
- Create a mini-film of the story.
- Draw a storyboard including the main highlights of the story.
- Create a cartoon or comic strip version of the story.
- Compose a song or entire musical that includes a discussion of the book's plot, main characters, setting, conflict and resolution.
- Create a board game based on events in the story.
- Design and create costumed paper dolls and retell the story.
- Create a PowerPoint or overhead presentation that includes a discussion of the book's plot, main characters, setting, conflict and resolution.
- Design and present a puppet show based on the book.
- Create a journal or diary that the main character might have kept. This can be in either words or pictures.
- Design and produce a map that details where key events in the story took place.
- Design and produce a quilt of paper or fabric that includes key events and other highlights from the story.
- Create a Venn diagram that illustrates a comparison between the book you've read and another story, either fictional or non-fictional.
- Create a mural or timeline for the story. Be sure to include the story's plot, main characters, setting, conflict and resolution.
- Create a game show (perhaps in the style of Jeopardy?) and act as the show's emcee.
- Prepare and present a mock trial where one or more of the main characters are defendants. Be sure the trial includes the story's plot, main characters, setting, conflict and resolution.

Additional Alternative Ideas for Research Reports

Famous people:

- Draw a headstone for their famous person's grave.
- Create a birth certificate including where the person was born and to whom.
- Create a timeline of events, including the famous person's contributions, as well as other important political events, inventions, music and art of the era, etc.
- Create a business card for the famous person.
- Write a letter to a head of state (king, queen, president, etc.) requesting funding to continue research, exploration, or whatever activity your famous person was known for.
- Write a newspaper article interviewing the famous person about his or her work.
- Create a resume featuring key events in the life of your famous person.

Animals, cities or countries:

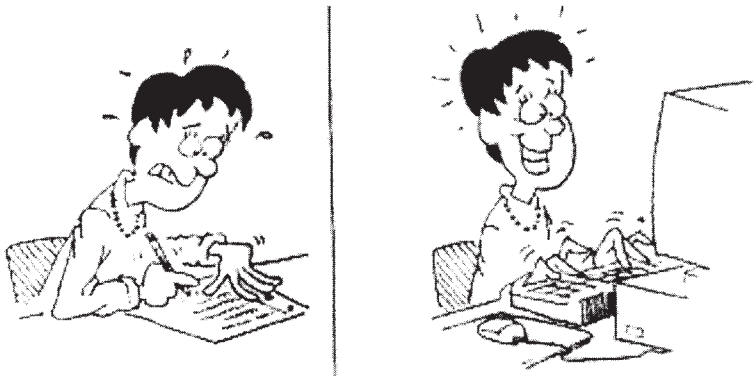
- Create an alphabet book that covers, A to Z everything about your topic.
- Design and produce a travel guide that highlights key historical events as well as places.
- Build a topographical map.
- Host a feast for your class featuring foods from the country you've studied. Dress in traditional costume and create a guessing game of facts from your country.

Or,

- Ask your students to think of their own creative ideas. They must be prepared to present the idea and defend how the project will demonstrate that they have read and understood the material.

Chapter Five

The Art of Handwriting vs. the Act of Keyboarding



> It seems her thoughts are there but her brain moves too fast and her slow writing makes the exercise of recording her thoughts unbearable. (G. T., *parent*)

Now for the actual act of writing. Nearly every visual-spatial learner I've worked with has had trouble handwriting. For some, their mental images come to them so quickly that their hands cannot keep up. For others, letters are multi-dimensional objects that rotate and roll around. It's tough to remember the proper direction of a multi-dimensional letter on a flat piece of paper. Still other students cannot form letters because they must begin in some random place in space, as in manuscript writing. This proves just too daunting a task. (I often recommend such students just jump into cursive and forget printing altogether.)

One day, computers will be a part of every classroom. Then, visual-spatial students with strong right hemispheres will be able to put to paper all of their thoughts, stories, poems and notes to lectures without the frustration of hand-writing. Why is the computer so important to their success?

Because typing requires both hands to work together. This means both hemispheres of the brain are working together. If "two heads are better than one," wouldn't you agree that using both hemispheres, particularly the stronger right hemisphere for your visual-spatial students, is better than one? (Swimming, martial arts and any type of physical activity that requires the student to "cross over" to the other side of the body are other great ways to use both hemispheres of the brain.)

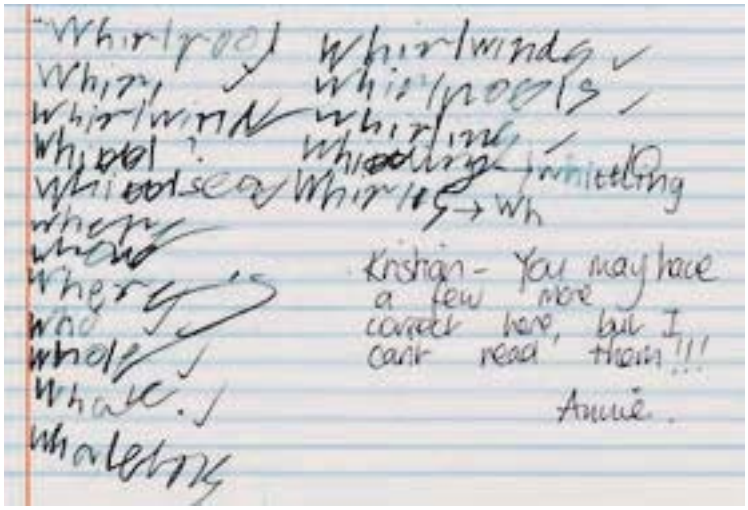
The speed of typing, over writing by hand, allows mental images to flow faster and the student doesn't have to stop and think about forming the letters. If you are able to flip and rotate letters in your mind, as many visual-spatials do, the letters p, b, d and q are all the exact same shape in different positions. But on a keyboard, the letters are in their capital form so a Q looks nothing like a P, or a B, or a D, no matter how you twist and rotate that letter. Also, the keyboard doesn't care if you are left- or right-handed–you need both hands, equally.

There are plenty of keyboarding programs available for students, including Mavis Beacon®, Mario Teaches Typing®, Disney Interactive®, JumpStart®, Type 2 Learn®, and Typing Tutor® (Platinum and Gold editions). I've even seen keyboards made for young students with smaller hands. Your students will be using computers throughout their lives, so why not teach them how to use them now? Learning to type on a keyboard may be the best way of completing homework assignments quickly and getting all their thoughts down on paper. In my experience, once a student is able to type 30 words a minute, the jump to much faster typing speeds comes very quickly.

Until your students become proficient at keyboarding, please remember to evaluate the content of their ideas separate from the quality of their penmanship. The creative part of the entire writing process is the single area in which they have a natural ability to excel and so, should be graded separately from all the mechanics as well as the penmanship.

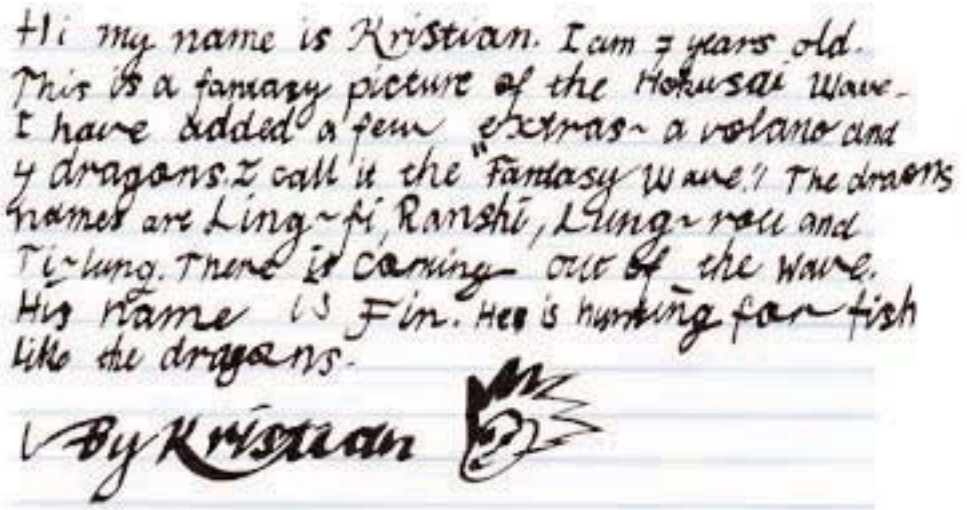
Handwriting as art

If keyboarding is not an option for your students, then they should be taught handwriting as an art form. I would encourage you to purchase a set of calligraphy pens for your class and teach your students how to write beautiful letters. When they see the art in writing by hand, it may become a joy to create rather than a chore. Calligraphy should be taught slowly and with purpose, the way handwriting was taught over a century ago, before the invention of the ball-point pen. Take the time to enjoy this newfound art with your class. Take a look at the following examples sent to me by a mom in Australia. This is her son's spelling test:



This was Kristian's writing using pencil. (I like his teacher's comment!)

Note his teacher's comment, "You may have a few more correct here, but I can't read them!!!" Then, after just two weeks with instruction in calligraphy, look at what this seven year old produced: (On the next page.)



This is his writing now after being allowed to use calligraphy and colour pens.

The ability to write beautiful flowing text will increase your students' confidence and legibility! Tip: Enlist parents' help when teaching your students calligraphy. Perhaps there are party invitations, place cards at the holiday table, birth announcements or wedding notes, even labels for boxes of toys, pictures, favorite things, CDs, DVDs–anything that could be created at home that would reinforce learning their new art form.

Chapter Six

Helping Students Ace Their Spelling Tests

When I present to audiences, I have a Peanuts© cartoon I use that shows Charlie Brown in bed thinking, "Sometimes I lie awake at night and wonder, 'What is the meaning of life?' Then a voice comes to me that says, 'I before E, except after C." I'm sure you've heard and probably used this spelling rule. Who makes up these crazy spelling rules? There are often so many exceptions to the rules; it seems silly to have the rule in the first place!

Most visual-spatial learners struggle with spelling. Their gift is in creating fantastic stories using the vivid imaginations they were born with, but not necessarily in getting those stories to paper with spelling the rest of us can recognize. This chapter will help your students stay excited about creating stories ***and*** be able to spell correctly!

Like everything else these students learn, in order to remember the proper spelling of words, they must be taught to create permanent mental images of them. Without those pictures to see in their minds' eyes, they'll be trying to memorize spelling rules and all the times they are broken. And, they'll likely fail. So, how are you going to help your students create pictures of their spelling words?

First, have them draw a picture that includes all the letters of the word. They can make up a story to go with it, if they like. Here's that illustration for the word, "Mountain," again. (This is in Chapter 3 on Reading.) You can actually see mountains in the letters "M" and "N."

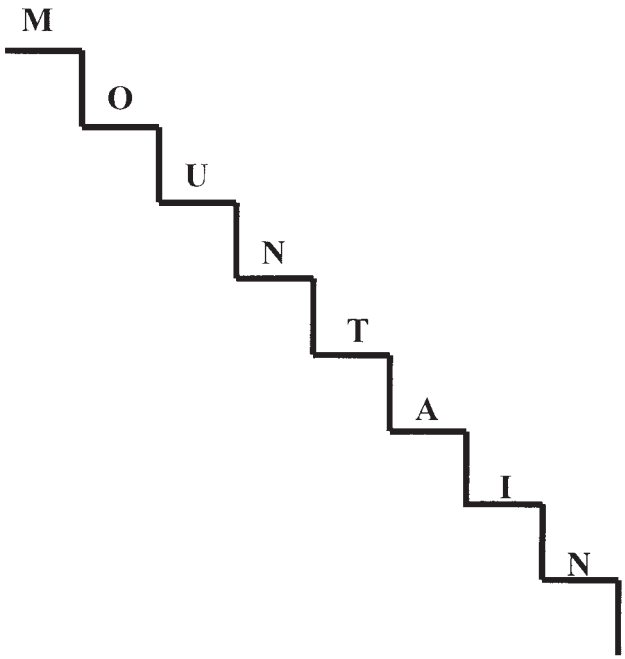
The characters in this student's tale are climbing and skiing the mountain and the student made up a story about why the "a" had to come before the "i" because that was something he kept forgetting to do when he spelled it. His story went that the character must first slide down the mountain, and then use an “I”-ce pick (which he turned the I into) to climb back up. Now, this approach of having a character on each letter may be a bit excessive and it's unlikely your students would need to follow this precise example.

Whichever part of a spelling word is giving your students trouble, have them take a blank, white piece of paper and write the word on it. They should use a colored marker and write the part that they keep forgetting, (in our word, the "ai") really large:

Mountain

In order for the right hemisphere of the brain to remember an image, your students should add color, size or humor to everything they learn. When they truly have a mental image of the spelling word, they'll be able to see it well enough to spell the word forward and backward. As you prep your kids for their next spelling test, try having them spell the words backward to test whether or not they are ready. Or ask that they prepare for the next spelling test at home by accurately spelling their words forward and backward.

Sometimes writing the letters of the word on stairs will help visual-spatials to see each letter of a word. They can then climb up the stairs, mentally, to spell the word backward and climb down the stairs to spell it forward! You'll find some reproducible staircases for spelling words that are from five to ten letters long at the end of this chapter and on the CD.



Another technique that a mum in New Zealand recommended to me is to have your students type each of their spelling words on a computer using a different font for each word. They should select a font that matches the feeling or mood of the word. So, "serendipitous," which sounds like a fun and interesting word, might look like this: SERENDIPITOUS. Or, they might choose these fonts for these types of words: frightening -- *Elegance* -- they just need to be sure to use a font they can read!

Many students have difficulty remembering how to spell "friend." Here's a silly story one student made up and he has since never forgotten the correct spelling:

Friend

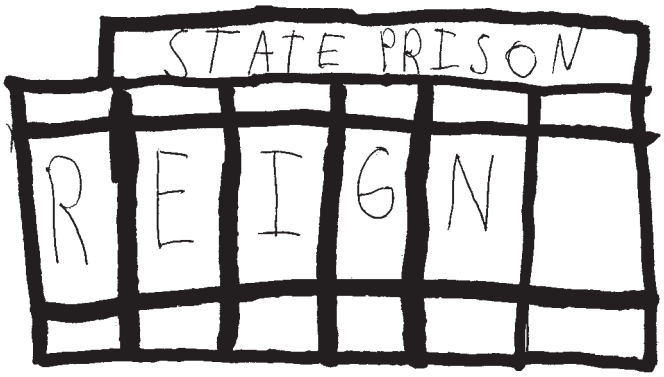
"These FRIes from FRIday's sure taste good
at the day's end!"

"You're right, FRIend!"

By using a rhyme and a double meaning on the letter combination "FRI," he used a trick that got his right hemisphere

involved in remembering how to spell this word. Metaphors and multiple meanings of words are stored in the right hemisphere.

One teacher taught her students to actually put "rule-breaking" spelling words in jail, behind bars. The word was thrown in prison for breaking the rules and the image of the word behind bars would stick in the students' memories. Here's one a student did for the word "reign" because the "ei" combination makes a long "a" sound. It breaks another rule by having a silent "g" in it.



Here are even more strategies you can try to help your students create mental pictures of their spelling words:

A Visualization Approach to Spelling*

*Borrowed from Neurolinguistic Programming. Form also included on the CD.

1. Have students write each spelling word in large print with bright-colored ink on a separate white piece of paper with the difficult part of the word written in a different color.

2. They should hold the card in front of them as far as their arm can reach, a little bit above the eyes.

3. Ask them to study the word carefully, then close their eyes and see if they can picture the word in their imaginations.

4. Now, have them do something wild and crazy to the word in their imaginations–the sillier the better. (They could make the word colorful, have the letters act as people or animals–anything that will help them remember how the word is spelled.)

5. They then place the word somewhere in space, in front of or above their heads. There is an infinite amount of space around a person that can hold an equally infinite number of words. When your students are later asked to spell the word, they will likely look to the very place they "put" it.

6. Individually, ask each student to spell their word backward with their eyes closed. Was there an even rhythm between the letters? Good! That means they are really looking at a mental picture.

7. Next, have them spell their word forward with their eyes closed.

8. Have all the students open their eyes and write the spelling word **once**.

9. They should close their eyes again and see if the word is still where they placed it in space. It should stay there forever!

Here's part of an e-mail I received from a parent in Australia who tried this strategy with her teenage son:

> So I drew up flash cards of 5 difficult words; inherent in their difficulty was they were not phonic, contained silent letters, or contained sounds that were not spelled phonically. I used: Obscene, Schematic, Marmalade, Machine, Traditional.
>
> I sat with A & told him NOT to sound these out but to just put them straight into his "TV screen". He looked at the cards–spelt them forwards/backwards and closed his eyes and told me it was done.

> I asked him to spell the 5 words. My first shock was he spelt the 5 words correctly. My second shock was when he asked nonchalantly "Do you need me to spell them backwards to you too?" I hadn't expected that and told him OK–where he proceeded to spell all 5 words to me correctly... backwards!
>
> From a boy who could barely read and was unable to spell, I started to cry. He was spelling and spelling correctly forwards and backwards. He could SEE these words. (J. M., *parent from Australia*.)

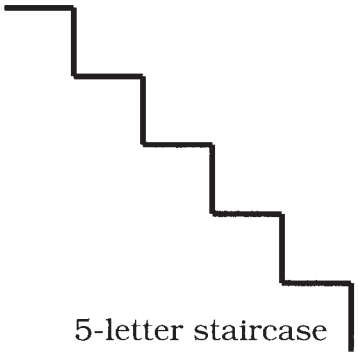
As I mentioned earlier, it is not unusual for visual-spatial learners to have difficulty with spelling, so I want you to consider this. Read the following paragraph. Don't try very hard, just quickly read the words:

> Aoccdrnig to rscheearch at Cmabrigde Uinervtisy, it deson't mttaer waht oredr ltteers in a wrod apepar, the olny iprmoatnt tihng is taht the frist and lsat ltter be in the rghit pclae. The oethr ltteers can be a cmolpeet mses and you can sitll raed the wrod!
>
> Apaprnelty, the huamn mnid deos not raed ervey lteter, but raeds the wrod as a wlohe. Ins't taht amzanig? So mcuh for the ipmorancte of spleling!

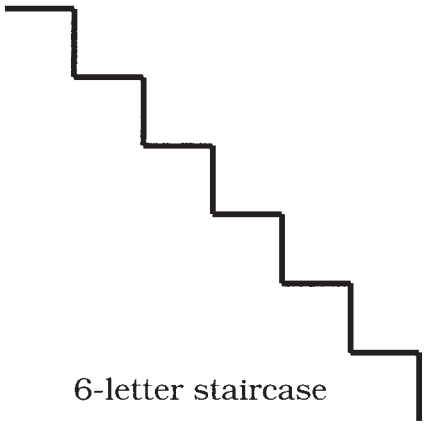
Now, I know that you were able to read this because you already know how to read and I'm not trying to suggest that an illiterate child would be able to read this. I just want you to consider that with computers and other tools available to your students, perhaps we are placing a bit too much emphasis on a proficiency that is not necessarily a life-skill for their time. The paragraph above is at least something to consider the next time you administer a spelling test!

Spelling Staircases

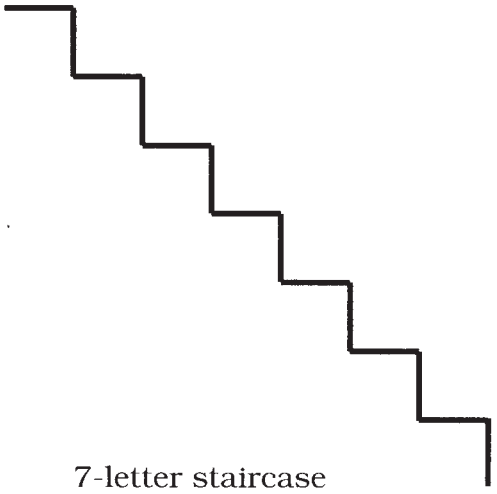
The following staircases are for your spelling words. To prepare for your spelling test, be sure you can spell each word forward and backward!



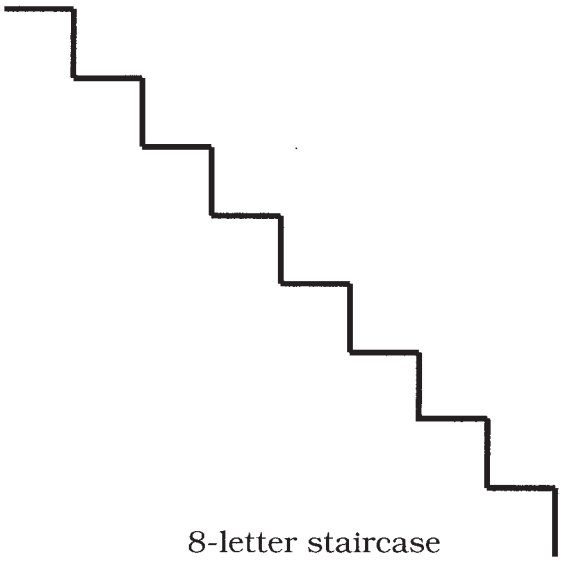
5-letter staircase



6-letter staircase



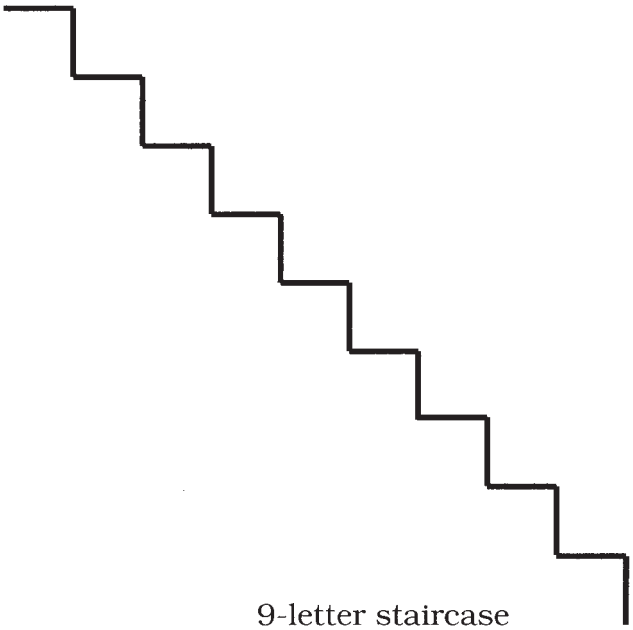
7-letter staircase



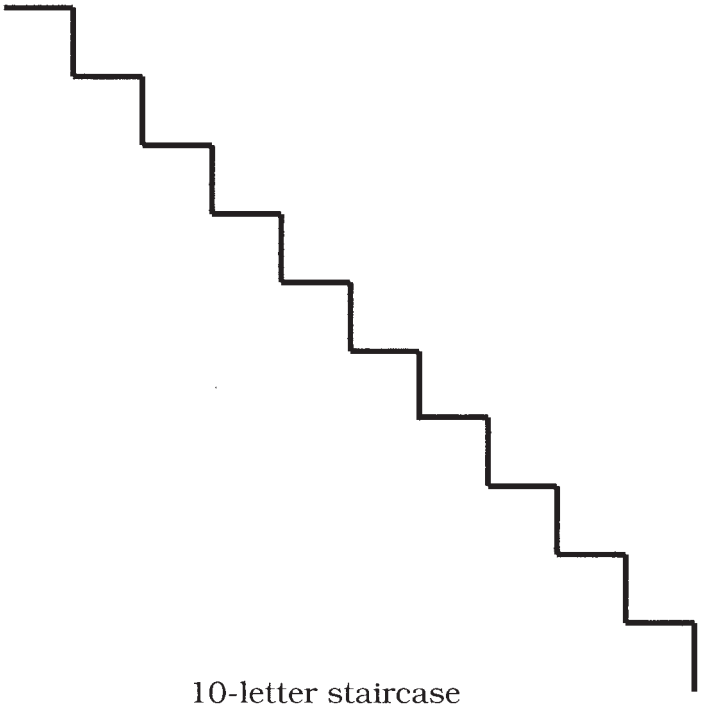
8-letter staircase

Spelling Staircases

The following staircases are for your spelling words. To prepare for your spelling test, be sure you can spell each word forward and backward!



9-letter staircase



10-letter staircase

Chapter Seven

Taking Notes in Pictures

> The most obvious way of representing what someone has said is to draw a picture of it. (Robert Ornstein, *The Right Mind: Making Sense of the Hemispheres*, 1997, p. 36.)

I mentioned in Chapter 4 that visual-spatial students should be allowed to take their notes in pictures. Here's a story from a student in a fifth grade World History class that elaborates just why this technique works best for VSLs: One day the class was treated to a guest who had been in World War II. As the gentleman was giving his lecture (an oral presentation only, with no maps, pictures or other images), he stood over one of the students who had dutifully chosen a seat, front and center. The lecturer noticed that the student was doodling in his notebook. He held the notebook up for the entire class to see and said, "I hope the rest of you are paying more attention than this young man." The student was, of course, horribly embarrassed.

After class, the visual-spatial doodler approached the guest teacher and explained that his "doodles" were how he took notes. He asked the gentleman to quiz him on any of the material. The guest teacher did and the student was able to answer each question correctly. The student had drawn the outlines of countries the gentleman had visited; he had drawn weapons the man had used from the descriptions given and he had engraved them with the years the man had visited there. The doodler remembered all of the new material because he had created pictures of the details, both in his notebook and in his mind. **Pictures are permanent**. The guest teacher apologized to the class the next day, saying he did not realize that students could effectively take notes in pictures.

> The best way to remember something is to change it, to transform the information in some manner…if it's verbal create a diagram or picture of it. (Levine, 2002, p. 119)

Your visual-spatial students should be encouraged to use this technique, of taking notes in picture form or creating diagrams, while they are listening to a lecture or if they need notes on research material from a book, a TV show or the Internet. Whatever source they are using to learn from, that material can be remembered and more easily recalled by drawing pictures. Drawing will help that material become permanent in their minds because they can later "download" those images whenever they need them.

When you draw something, you own it.

Picture thinkers must be allowed to call upon this strength, of storing and recalling images, if we are to truly honor their learning style.

> In another study… students recalled vocabulary words better when they read the definitions and drew their own pictures to represent them than when they read and wrote the words and the definitions. Tracing a picture of the definition produced better recall than writing the definition, but *creating one's own visual image* was more effective than tracing. (Williams, 1983, p. 31. emphasis added)

> My 9th grade vocabulary teacher…had us learn 500 words in 9 weeks by using index cards. On the front of the index card, we wrote the vocabulary word. On the back of the card, we drew any picture that reminded us of the word…To this day, more than 20 years later (!) I still remember almost all of those words. (As quoted in Silverman, 2002, p. 277.)

If your students find that they can't draw fast enough while in class, you might consider allowing them to tape record the lecture. That way, they can complete their drawings later, when they can replay the tape and stop it as

needed. It must be understood, however that recording for later listening is certainly not an excuse to zone out during class! I've included a contract for taping lectures at the end of this chapter (and on the CD) that you can use with your students. Some visual-spatial learners remember the teachers' facial expressions and precisely where they were standing when they discussed certain topics. So watching the teacher can sometimes work better than taking notes, when the student's head must be down, looking at a notebook. This may be particularly true for students with auditory issues. And if a student has slow processing speed or a motor coordination deficit, he has to THINK about how to make the letters, which distracts him from focusing on the lecture.

If taking notes in pictures is too time consuming, your students should try a modified version of picture-note taking by combining a mix of drawing and words. Teach your students to use various symbols and abbreviations in their note taking. Here are some more samples to get your students started:

Word	Shortcut
with	w/
between	b/w
double	2x
triple	3x
On the other hand	OTOH
By the way	BTW
In the first place	1st pl

Here are some more ideas: the symbol Δ means, "change," and, of course, the symbol < means "less than," and > means "more than." This symbol @ is quicker to write that "at" but just as meaningful. The Greek letter Sigma, shown as Σ, means "sum." These are commonly used symbols, but your students can make up their own. I used ↑ to mean something was increasing or growing, and ↓ to mean something was being taken away or becoming smaller. This symbol Ω, Omega, is the last letter in the Greek alphabet. It could be used whenever something was ending or if a character died.

The capital "A" is the Greek symbol for Alpha, or the beginning and could be used to write about the start of something new, or a birth, or the introduction of a new character. Students could use "B4" for the word, "before," or "oppty" for "opportunity." I'll bet your class can think of lots of abbreviations and then start including them in their note taking.

I've used "VSLs" throughout this book to stand for visual-spatial learners. Many people say "TV" for television. If your students use Instant Messaging, they already know lots of acronyms that are used to type secret messages their parents don't know about (or so they think!). Acronyms are also used to keep the sender from having to type every word. Some of these include, "PLOS" for Parents Looking Over Shoulder and "LOL" for Laughing Out Loud. Encourage your students to create their own acronyms in their note taking. Depending on the subject they are taking notes for, there are probably lots of repeated phrases that they could substitute with an acronym.

Taking notes in pictures also works well for information your students have to research or memorize. For example, let's suppose you are studying the capitals of each state in the U.S. and your students learn that Salt Lake City is the capital of Utah, or that Springfield is the capital of Illinois. Ok, these are easy ones to create pictures for, but you get the point! Here's what one student drew for me:

Because he created his own drawing and he used humor, he is more likely to remember this capital than trying to just memorize it. Your students can do the same thing!

Another trick that works for many visual-spatial students is to create images of the words they are studying by boxing, circling or underlining them. The simple act of having a particular word stand out from the others, by being enclosed or differentiated somehow should help to create an image of the word.

Use the Tape Recording Log and Agreement, on the following pages, to record those students under contract for Classroom Tape Recording.

Tape Recording Log

Use this log to record those students under contract for Classroom Tape Recording and to monitor the effectiveness of this strategy.

Student's Name	Contract Date	Contract Initiated Because...	Behavior Changes

Agreement for Classroom Tape Recording

I, _____, request permission to tape record class lectures under the following conditions:

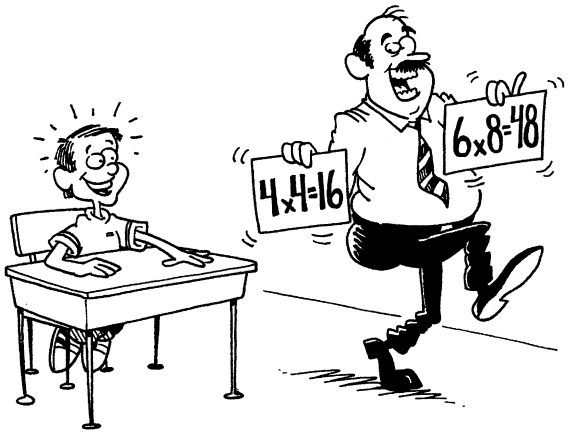
1. That my attention shall remain focused on the teacher/lecture,
2. That I shall be responsible for creating appropriate notes (in picture or word form) based on the lecture,
3. That I will not misuse the recorder nor distract other students.

_____ _____

(Signature of student) (Signature of teacher)

Chapter Eight

Teaching Math Facts



If you're using Mad Minutes or some other form of rote memorization technique to help your students memorize the times tables, I want to ask you to set those materials aside for just one week. If you'll try the tips in this chapter, I'm confident you can get every student to create permanent images of each multiplication fact that they can easily recall. Just try them! Visual-spatial learners are at a distinct disadvantage with memorization and timed tests because they cannot employ their strengths in any way that helps them succeed. Using images, music and humor, and helping your students to discover patterns in numbers, will use the strengths of the right hemisphere and offer them an advantage at mastering their times tables.

Let's start with a copy of the next page to use with this chapter: (The Math Grid and each partially completed grid are also available for you on the enclosed CD.)

I usually start by commiserating with the kids: "This grid is pretty big, huh? There are 169 facts in there. How on earth are you going to memorize 169 facts?" As visual-spatial learners, they're looking at the big picture, the entire grid. If they don't know many of the facts already, they're probably beginning to panic–169 facts is a lot of facts.

Fig 8-1

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Start with the facts they know right from the start. Probably the 0s, the 1s, and the10s, right? Let's fill those in. Your students' grids should look like this when you're done:

Fig 8-2

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2									20		
3	0	3									30		
4	0	4									40		
5	0	5									50		
6	0	6									60		
7	0	7									70		
8	0	8									80		
9	0	9									90		
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11									110		
12	0	12									120		

Now take a piece of paper and lay it diagonally across the grid so that only the upper right half of it is showing. (If you have access to an overhead projector, copy Fig. 8.3 from the

CD onto a transparency to demonstrate this more easily.) It should look like this:

Fig 8-3

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	2	3	4	5	6	7	8	9	10	11	12	
2										20			
3										30			
4										40			
5										50			
6										60			
7										70			
8										80			
9										90			
10										100	110	120	
11													
12													

Demonstrate to your students that every number on the half of the grid that is showing has a matching number in the half that is covered. Tell them that this is known as the commutative principle. In algebra, it is shown as a * b = b * a. Or, 10 x 3 is the same as 3 x 10. The grid just got a whole lot smaller! They only have to learn half of it. (And your students just learned some algebra without even trying! The kids I've worked with love knowing they're learning algebra already.)

I think the next easiest number to multiply by is probably the 11s. Have your kids fill in the rows for the 11s, up to 11 x 10, on the grid. I have some fun tricks for 11 x 11 and 11 x 12 that I'll share later.

Do your students know how to skip count? Most kids I've worked with can skip count by 2s and by 5s. If they don't know how to skip by 5s, teach them that every answer for the 5s must end in either 5 or 0. There's a pattern to it, which their right hemispheres will love! Have them add those answers to their grids:

Fig 8-4

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6			15					30	33	
4	0	4	8			20					40	44	
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12			30					60	66	
7	0	7	14			35					70	77	
8	0	8	16			40					80	88	
9	0	9	18			45					90	99	
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110		
12	0	12	24			60					120		

Remember that one of the things a right hemisphere loves is rhythm, that's why it enjoys music so much. Here are some easy facts to learn because of the rhythm in the equations:

5 x 5 = 25 6 x 6 = 36

6 x 4 = 24 6 x 8 = 48

Try teaching these rhyming equations as your students jump on a trampoline or have them stand and bounce, or jump, to the rhythm. Any time you can get their bodies into the act of learning, you've used another tactic of engaging the right hemisphere.

The right hemisphere also enjoys humor and tricks. These are simple ways to remember three more equations:

You have to be 16 to drive a 4 x 4. (16 = 4 x 4, or 4 x 4 = 16)

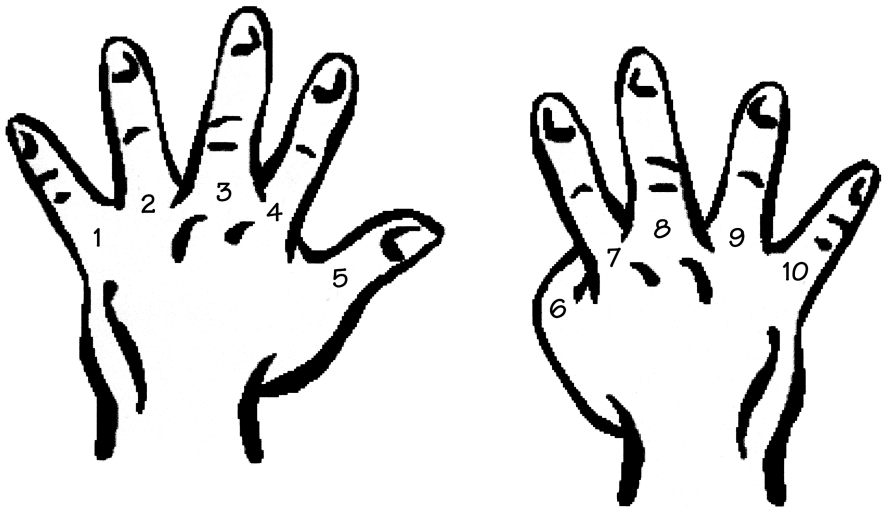
5, 6, 7, 8 is what you remember for 56 = 7 x 8 (7 x 8 = 56)

1, 2, 3, 4 is what you remember for 12 = 3 x 4 (3 x 4 = 12)

Now, have your kids add these answers to the grid.

I think the next easiest number to multiply by is the 9s. There are so many tricks for remembering the 9s times tables, your students can pick a favorite! First, there's the "finger method." What you do is assign each of your fingers a number, as shown below:

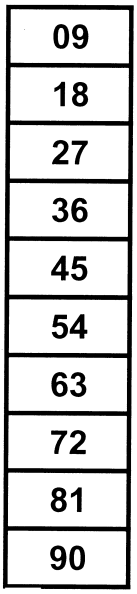
Finger Method of Multiplying by Nines, Fig 8-5



In this example, the equation would be asking 6 x 9, because the finger assigned as number 6 is folded down. That leaves five fingers up on your left (those represent the tens digit) and four fingers up on the right. (Those are the ones.) The answer, then, is 54! Have your students try this with all the equations for the 9s.

If they don't like the finger method, or they need further reinforcement, show them how to look for patterns. The right hemisphere loves uncovering patterns and the 9s have great patterns to discover. First, for every multiple of 9, the digit in the tens column increases by one while the digit in the ones column decreases by one:

Fig 8-6



Next, no matter what you are multiplying 9 by, as long as it is between 1 and 9, the two digits of your answer will always add up to 9. For example, in the equation 4 x 9 = 36, the digits 3 + 6 = 9.

The last pattern I know of with the 9s is that all the possible answers have reverse answers. In other words, one possible answer is 09, another is 90, one is 18, and another is 81. Show your students the following pattern (this is done in larger format on the CD and at the end of this chapter so that you can create an overhead):

09

18

27

36

45

54

63

72

81

90

Now, have your students add all the answers for the 9s to their grids.

OK, on to the 3s. Borrow or purchase a copy of the Schoolhouse Rock multiplication videos www.school-houserock.com, "Multiplication Rock." These used to be commercials on Saturday morning television in the 1970s. Now, you can get them on video or DVD. There are even short cartoons for American History and English grammar. The song they made up for memorizing the 3s is very catchy–your students won't be able to get it out of their heads! And, once it's in their heads, they'll be able to skip count by 3 easily. If you can't get a hold of these videos, write the following numbers on a piece of blank white paper. Create your own rhythm (or have your students create one!) for memorizing the order. It helps if you do this in sets of three (3, 6, 9 pause, 12, 15, 18, etc.) You can even sing!

3 6 9 12 15 18 21 24 27 30

Notice there are three numbers in the ones category, three in the teens and three in the twenties. Another pattern! Or, try having your students sing the 3s to "*Jingle Bells*":

"3, 6, 9 12, 15 18, 21 24, 27, 30 and you're done!"

Add the 3s facts to the grid.

Fours are really easy if you teach them as double the 2s. So, if your kids know that 7 x 2 = 14, then to find 7 x 4, they halve the 4 then just double their first answer, or 2 x 14. Have them try this with the rest of the 4s. They can do the same thing with the 6s because 6 is just double 3. So, they should do the multiplication problem with 3 and double their answer. You can show this as the distributive property (you'll find this on the CD so you can create an overhead to demonstrate it):

$$\underline{6 \times 8 = ?}$$

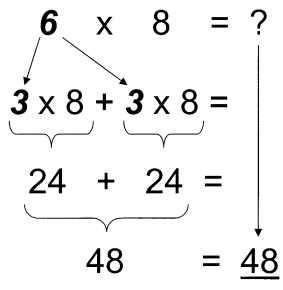


Fig 8-7

After completing the rows for the 4s and 6s, I tell the students, "The grid is really filling up and you haven't even had to work very hard yet, right?"

The 11s were easy up until 11 x 10, but what about 11 x 11 and 11 x 12 or even higher? Here's a wonderful trick for the 11s (this is also provided in a larger format at the end of the chapter and on the CD in color so you can create overheads):

1. First, split the digits of the number you are multiplying by 11. So, let's start with the 11 x 12 and split the 12 like so:

1 2

2. Next, add the digits of that same number. So, in our example of 11 x 12, add the digits of 1 and 2 and place your answer between the split digits:

1 **3** 2

This works for any number times 11! Once you get to a number whose digits are greater than 10, you just add and carry! So, in the equation, 11 x 68, show your students the following:

1. Split the digits: 6 8

2. Add the digits: 6 (1)4 8

(Point out that obviously the answer can't be 6,148, so we have to carry the ten over to the 6, making it 7):

3. The final answer should be: 7 4 8

Have your students fill in the 11s on their grids and take a moment to reflect how far they've come! The grid is nearly complete and should look like this:

Fig 8-8

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	
4	0	4	8	12	16	20	24	28	32	36	40	44	
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	
7	0	7	14	21	28	35	42		56	63	70	77	
8	0	8	16	24	32	40	48	56		72	80	88	
9	0	9	18	27	36	45	54	63	72	81	90	99	
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24			60					120	132	

OK, now the 12s. The 12s up to 12 x 9, are just the 2s plus 10 times the number you are multiplying by. So, if you're teaching 12 x 4, first have your students calculate 10 x 4, which equals 40. Then, have them calculate 2 x 4, which equals 8. Last, have them add the two answers, 40 + 8 = 48. They already know 12 x 10 and 12 x 11 from doing them earlier.

Here's another way to teach the 12s. Ask if your students see a pattern in all the possible answers for the 12s. Here they are:

00
12
24
36
48

60
72
84
96
108

120
132
144

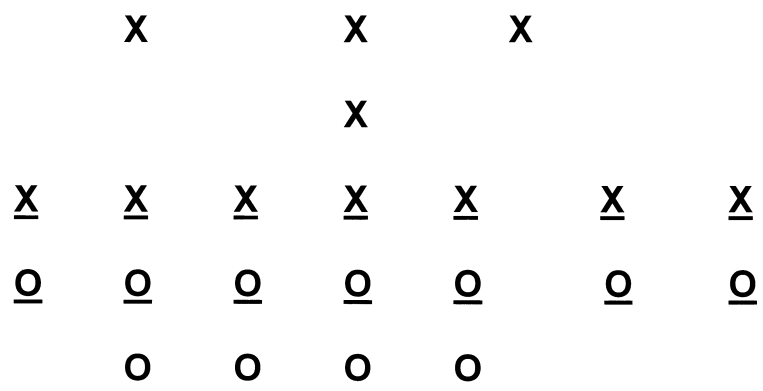
If you look at the ones digit of each possible answer, they follow a 0, 2, 4, 6, 8 pattern. Each time the pattern is complete (at "8"), the number in the ones digit skips a beat. Otherwise, the 1s just increase by one! So you have 1, 2, 3, 4, (skip), 6, 7, 8, 9, 10, (skip), 12, 13, 14. Using this method, your students can predict 12 x 15, and beyond!

Have your students add the 12 facts to the grid and notice how many empty boxes remain. There are only two facts left: 7 x 7 and 8 x 8!

Fig 8-9

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42		56	63	70	77	84
8	0	8	16	24	32	40	48	56		72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Here's how you're going to teach those last two facts so that they're memorable. There's an easy sports trick for 7 x 7: The 49ers are a professional football team in San Francisco. On the following page is a visual for how the players on a football team might be in position. Show your students how there are seven players in a row and that these are referred to as the "linemen." While each team has 11 players on the field for every play, only seven linemen can be at the front line at a time. So, 7 x 7 = 49(ers!) On the next page are two "teams" of players, represented by Xs and Os:

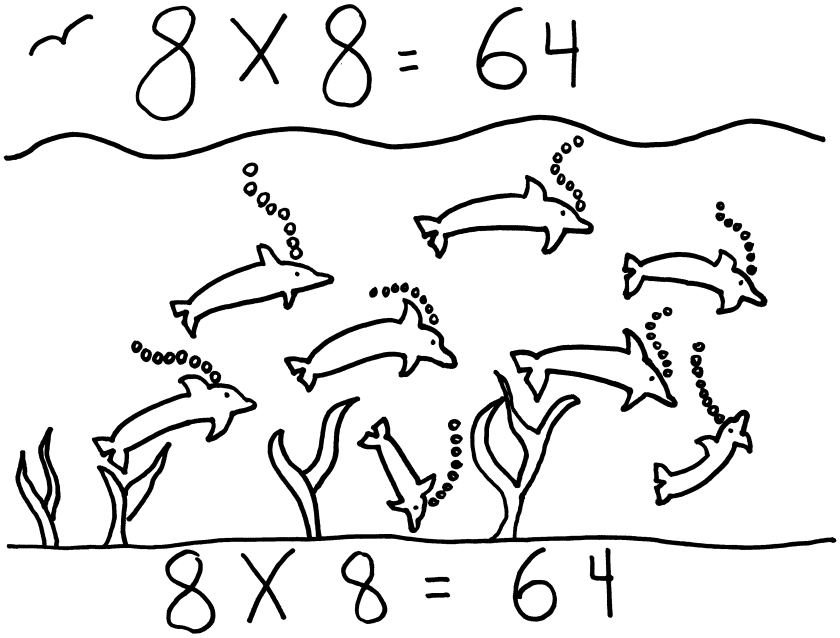


Ok, our final equation is 8 x 8. You can try this rhyming trick first:

"Eight and eight went to the store, to buy Nintendo 64!"

But, if your students aren't familiar with this gaming system (Nintendo 64), try this: Ask them to think of something they *really* like. They can choose anything they like, from a favorite animal to food, it doesn't matter. Let's say someone chooses dolphins. Now, to master the equation 8 x 8, for example, ask that student to take a blank piece of paper and draw eight dolphins, each with eight bubbles above their heads. Now, have the student write across the top and bottom of the paper, 8 x 8 really large and in color. Then, ask the student to count all the bubbles and place the answer, 64, at the end of each equation, on the top and bottom of the page.

Fig 8-10



Send the illustrated equation home with the instructions that the student is to tape the picture on a mirror to study while getting ready for bed, or above the bed, so that it is the last thing the student sees before falling asleep. Tell your students to make permanent mental pictures of their drawings, including the equation. They can replace the dolphins with anything that interests them, just make sure they have eight of a subject with eight of something else (pieces of pizza with slices of pepperoni; birthday cakes with candles, ice cream cones with scoops, donuts with sprinkles, squirrels with nuts, horses with apples, elephants with peanuts, etc.). In order for the technique to work, however, each student must have an *emotional connection to the subject* (that's why you had them choose some food or animal they *love*!) and they must draw the picture themselves, using no clip art or cut out pictures. When students draw something, they own it!

> I told him to not try & "work it out" but to just put the 'picture' of the equation and its answer in his head. Suddenly he knew 5 equations he hadn't known at the start. He could see "9 x 9 = 81" in his "TV Screen" and I was floored. He now sleeps with a times table chart above his head; first thing he sees each morning and last thing he sees each night and he is learning more of those all the time! (J.M., *parent from Australia*)

Your students should also use this technique for any of the facts that didn't stick with the other methods. Be sure they use different animals, or other things they care about, for each equation, though. The technique won't work if they use the same image for different math facts.

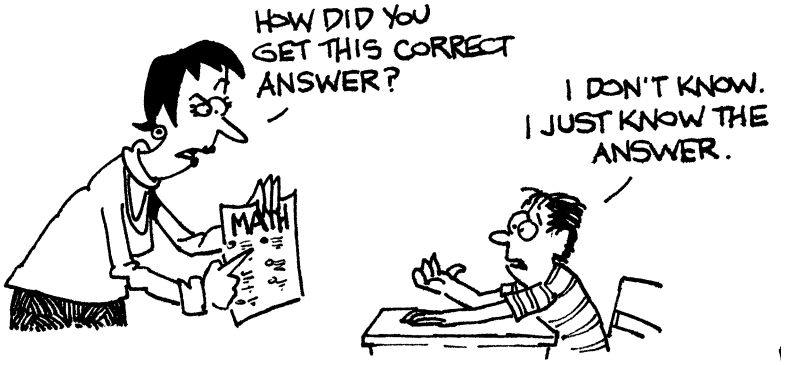
That's it! Most students are able to permanently learn their math facts in less than one week when they use these visual strategies and without the dreaded timed tests.

Division is just the reverse!

> … my six year old [daughter]–is giving me answers to basic division questions by "finding the times picture and going backwards!" (C. J., *teacher and parent from New Zealand*.)

So what about division? For a lot of the simple division problems (as opposed to long division problems), if your students truly have a picture of the multiplication fact, they'll be able to see the answer right away. For example, when they learned that, "You have to be 16 to drive a 4 x 4," they created a mental picture of the equation 4 x 4 = 16. So, if they were asked 16 ÷ 4 = ?, they should be able to see the missing number from their picture. When they learned 6 x 6 = 36, the picture of that rhyming equation should be clear to them when they are asked 36 ÷ 6 = ? What about the equations that they drew pictures for? If your students really do have that picture in memory, they'll be able to see which number is missing when asked the division problem.

Long division–showing the work



Do your visual-spatial students answer math problems accurately, but rarely show any steps taken? Can some of them solve complex long division or algebraic equations, but not be able to tell you how they arrived at an answer? For visual-spatial learners, there are few requests more frustrating than, "Show your work." Because this type of learner intuitively grasps the "big picture" rather than taking

what would be a painfully slow series of steps to reach a conclusion, the demand to "show your work" is nearly an impossible task. VSLs very often just see the correct answer–*and they're usually right*. They can't tell you how they know, they just know. They can't show you how they got their answer, they just got it.

Because most teachers are sequential thinkers, we teach in a step-by-step manner and expect our students to solve math problems in a step-by-step fashion. We also tend to anticipate that our students will be able to demonstrate their work by detailing the steps they took to arrive at their answers. The same is true for textbook developers and those who construct state achievement tests. This has had a devastating, unanticipated outcome for those who think in pictures and see the correct solution without ever taking a step. Every day, students are admonished, even accused of cheating, because they are intuitively able to reach accurate solutions to complex math problems but absolutely unable to explain how they got there. Most of the time, they lose partial or full credit for their answer because they did not show their work. At a time when "thinking outside the box" is a revered ability in the business world–when to be able to find solutions to complex problems is highly regarded–it's time we stop penalizing these students for their innate gifts and begin honoring what comes naturally to them.

Until that day, however…

It is quite likely that visual-spatial students sitting in math classes at all different levels are being docked credit for answers they cannot support with detailed steps. Nearly every standardized achievement test in the United States deducts credit when the steps are not shown to solve a particular problem. So, I propose it's time we teach visual-spatial learners to fight back! "Show your work," doesn't have to mean complete the problem exactly as a left-hemispheric, auditory-sequential thinker would. It means, teach me, the left-hemispheric, auditory-sequential thinker, how you did this so I can do it myself. Show me, in the way I learn best

(step-by-step), how to do this. When students know the material well enough to teach it, they really know it. If we help our visual-spatial students learn how to explain their answers to someone who does not think in images, then we've succeeded in teaching them to show the details in reaching their conclusions. Here's what one parent wrote about this technique:

> Dolls are useful. When E is having trouble with a concept, I have her "teach the dolls". For some reason the act of teaching the dolls helps her get things straight in her own mind and all of a sudden she "gets it". (From K. C. *parent*)

Until we've created an understanding of different learning styles so pervasive that our state tests accommodate this learning style, we'll have to help our visual-spatial students cope with predominantly left-hemispheric tests. By teaching them how to communicate to those who do not think like they do, who do not immediately see the picture (or answer), they may be able to beat a system that unfairly docks credit due them.

First, allow visual-spatial students to perfect whatever strategy works for them in solving their math problems. This is another opportunity to group students based on their preferred learning style. You can use the VSL for Kids Results Log from Chapter 2 (and on the CD) to guide you in grouping your students. Have them test their methods with a calculator to be certain their answers are correct. Once the students have polished their unique systems, gradually increase the level of difficulty of the problems to continue to test their methods. Once they have consistently answered the problems correctly, using their own strategies, show them how to work in reverse. In other words, they can continue to use the method they devised (so long as they produce accurate results) to arrive at an answer and then they work backward through the problem to show the details to someone who needs to be shown the steps, or "work."

For example, in the long division problem on the next page, let's suppose that the student, using whatever mental

$$\begin{array}{r} 26 \\ 15\overline{)390} \end{array}$$

or written method this student has created, arrives at a solution and has proven it is correct by double-checking the answer with a calculator.

$$\begin{array}{r} 26 \\ 15\overline{)390} \\ 30 \end{array}$$

Now that the answer is known, the student simply works through the solution to show the steps. So the first "work" to

$$\begin{array}{r} 26 \\ 15\overline{)390} \\ \underline{30} \\ 90 \end{array}$$

show is 15 x 2. This answer is then written directly under the 39:

Next, show the student that the next "work" to write out is to subtract the 30 from 39 and bring down the next digit:

The student doesn't need to figure out how many times 15 goes into 90, because he or she already knew (saw) that! It must be 6. But this step needs to be shown, so just write out the last bit of work:

$$
\begin{array}{r}
26 \\
15\overline{)390} \\
\underline{30} \\
90 \\
\underline{90} \\
0
\end{array}
$$

While it may seem obvious to the student, the last number showing in any problem such as this must be 0 or the work has not been shown in a manner in which the auditory-sequential learner can follow.

By working backward through problems, in math and other areas, too (creating an outline of a report after the report is written qualifies as working backward!), visual-spatial learners can demonstrate the steps of their work. Then, the auditory-sequential learners they must communicate with (primarily, we teachers) can understand exactly how these students arrived at their answers. We open the doors by allowing them to work backward. Demonstrating their work in a manner that can be interpreted by sequential thinkers, visual-spatial learners can finally receive grades commensurate with their abilities.

Note: If your students have difficulty keeping their numbers lined up correctly when doing division, try having them turn lined paper sideways so they have columns to place the numbers in. Or, they can use graph paper to help keep numbers aligned.

Using math manipulatives

There are lots of great products for "seeing" how math works and they're not limited to younger grades, either. If your students are having trouble learning a particular math concept, find or make manipulatives you can use so they can see the math. Once they have a picture of how math works, many will understand the importance and enjoy the fun in

this subject. The problem comes when students aren't given a chance to use something hands-on to watch how an equation comes together. They literally can't see how it happens and are turned off to math, sometimes permanently or until higher level mathematics is made available to them.

Cuisenaire rods (available from www.etacuisenaire.com and most teacher supply stores) can be used to demonstrate math problems from simple addition and subtraction through algebraic equations. Borenson and Associates produce a great set of manipulatives for understanding algebra called Hands-On Equations©. You use a visual balance to shift parts of an equation to one side or another and then solve for a solution, or "x." By maintaining balance, literally, your students *see* how algebra works. Look for or create more ways to *show* math and you'll engage every learner in your room. Check out "Ms. Math," Rachel McAnallen, http://www.cptv.org/msmathhome.html, for great ideas on presenting math concepts, from number awareness through higher level mathematics.

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Multiplying by 11:

1. First, split the digits of the number you are multiplying by 11. So, let's start with the 11 x 12 and split the 12 like so:

1 2

2. Next, add the digits of that same number. So, in our example of 11 x 12, add the digits of 1 and 2 and place your answer between the split digits:

1 **3** 2

11 x 68:

1. Split the digits: 6 8

2. Add the digits: 6 (1)4 8

The answer can't be 6,148, so we have to carry the ten over to the 6, making it 7:

1. The final answer should be: 7 4 8

You have to be *16* to drive a *4* x *4*.
(16 = 4 x 4, or 4 x 4 = 16)

5, *6*, *7*, *8* is what you remember for
56 = *7* x *8* (7 x 8 = 56)

1, *2*, *3*, *4* is what you remember for
12 = *3* x *4* (3 x 4 = 12)

Chapter Nine

Using Visual-Spatial Strengths to Learn New Material

I have met so many wonderful, innovative teachers who employ a countless variety of visual strategies so that their students can successfully learn and recall new material. Many of them have been kind enough to share their ideas with me and I'd like to offer them to you, in turn. If you have a tip or technique that has worked particularly well with the visual-spatial learners you've taught, I'd love to hear from you. You'll find my website and e-mail address on the back cover.

Let me start by showing you just how easy it is to incorporate visual imagery into your lesson plan. Take the information your students must memorize and work together with them to create a silly story with it. I once met a very animated teacher and conference presenter, Jon Pearson www.createlearning.com. Jon taught the 13 colonies in less than five minutes by having his audience memorize a ridiculous story–in pictures that everyone created in their minds–of a Jersey cow named Georgia, on top of the Empire State Building. Can you "see" **New Jersey**, **Georgia** and **New York** in this story? The tale went on to include all 13 original American colonies. After each line we repeated, we were told to create an image in our mind's eye and to make it as big and silly as we could:

There's a cow named ***Georgia*** (Georgia)

It's a ***Jersey*** cow (New Jersey)

She's sitting on top of the ***Empire State*** Building (New York)

She's singing a couple of Christmas ***carols*** (North and South Carolina)

Under her arm is a ***Virginia ham*** (Virginia and New Hampshire)

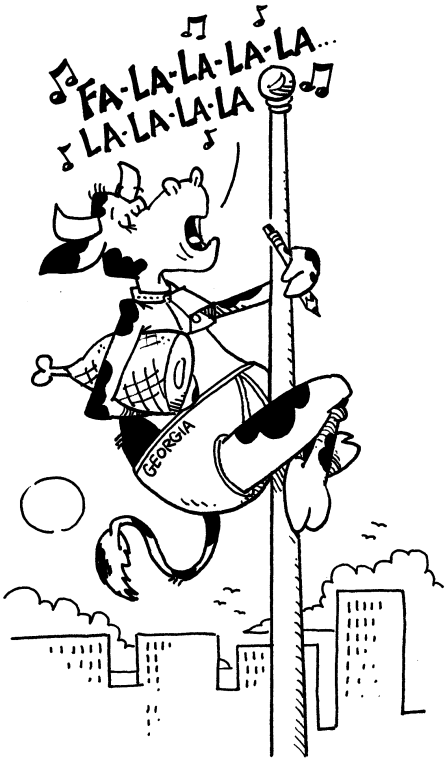
The cow is wearing a pair of yellow ***underwear*** (Rhymes with Delaware)

In its hoof is a ***pencil*** (Pennsylvania)

The cow is making a ***Connect***-the-dots drawing (Connecticut)

Of ***Marilyn*** Monroe (Maryland)

Walking down a ***road*** (Rhode Island)



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Going to ***mass*** (Massachusetts)

When Jon was done, every member of the audience could remember the ridiculous image we had mentally created of a cow on top of the Empire State Building. By doing that, we had remembered all 13 colonies. I have used this example in Canada, New Zealand and Australia to prove the point that anyone can memorize new material, even if it is completely irrelevant to them. Why would anyone in Canada or Down Under care about American colonies? Most of the students I work with outside the U.S. know only California and Florida, but they remember these 13 new ones from the mental image they create. The best part is that you and your students don't have to be artists to do this. If you want the images to be drawn, not just imagined, stick figures work just fine. As long as the story is funny, it will be easily recalled later. Color and exaggerated size effectively engage the right hemisphere, too. You can use this idea to help your students remember so many different types of material, from historical facts to scientific principles and so much more.

Beginning piano students are taught the notes of the scale as Every Good Boy Does Fine (EGBDF). Have you used this mnemonic for memorizing the Great Lakes?

H Huron
O Ontario
M Michigan
E Erie
S Superior

In Canada, this is taught in geographic order as:

Super (Superior)

Man (Michigan)

Helps (Huron)

Every (Erie)

One (Ontario)

My son had to memorize this information for a science class:

Domain **K**ingdom **P**hylum **C**lass **O**rder **F**amily **G**enus **S**pecies

So he created this "headline" to remember the order:

Darwin **K**racks **P**orpoise **C**ode **O**rders **F**amilies to **G**roup **S**pecialist

It's meaningless and ridiculous, which makes it memorable! Using acronyms and mnemonics with your class as a way to help them memorize new material is another way of tapping into the strengths of the right hemispheres of your students.

Using music

A friend of mine wrote me with this:

> I took an exhausting/exhilarating 16-hour reflexology certification course this past weekend. I was told that memorizing the official 47-word definition of reflexology– exactly, word for word, was worth 15 points on the Certification exam. First I thought, I can never do this.

> Then, I decided I would make a song out of it!! I put it to a familiar tune! THAT came from YOU!! (Personal communication, E. Meckstroth, October, 2004.)

Catchy tunes are yet another strategy to make new information easy to remember and permanent. Take a common song, especially a nursery rhyme like *Three Blind Mice*, *Twinkle, Twinkle Little Star*, or *Happy Birthday*, and put the information you are trying to teach your kids into that familiar melody. Three year olds manage to learn 26 bits of completely irrelevant information (the alphabet) in order by putting them to music. Because the right hemisphere of the brain enjoys music, humor and rhythm, they'll have a better chance of remembering new information if you do something silly with it. Try it–you may be surprised at the results!

Using fantasy

Fantasy is a powerful form of visual thinking and is particularly useful when teaching about subjects that your students cannot experience firsthand.

> A fantasy in which students imagine themselves either as a membrane or as a molecule passing through a membrane creates inner imagery which is useful to visual thinkers and provides concrete experience that has the power to stimulate and involve…
> (Williams, 1983, p. 32.)

You can use fantasy, simulation and role-playing to teach your students in a number of different areas, particularly science and social studies. Re-enactments of significant historical periods help to secure new knowledge and make learning fun; imaginary travel to faraway places–even impossible ones like microscopic worlds–allows students to envision what life may have been like through another's eyes or as another form. "One of the more dramatic examples of the power of this type of thinking, Albert Einstein's fantasy of himself riding a ray of light, played an important role in the discovery of the theory of relativity." (Williams, 1983, p. 117.) Classroom use of fantasy should incorporate plenty of time

for students to create their images and encouragement for them to pursue this way of learning. It should be devoid of any preconceived notions of how one should create and experience the fantasy. One child's fantasy of life as a certain species of animal or of traveling to Ancient China will be quite unlike another's. This is a technique that every student will enjoy and one that your visual-spatial students will find a successful strategy in creating and recalling permanent images.

Using metaphors

Helping students see connections between what they know and understand and something new they are learning, even though the two may appear completely unrelated, can facilitate that learning and help it become permanent. "If there's no connection to the learner's experience, the information gets lost and becomes just another meaningless memorization ritual." (Ornstein, 1997, p. 171.) Working with metaphors can be a powerful strategy to aid students in making connections.

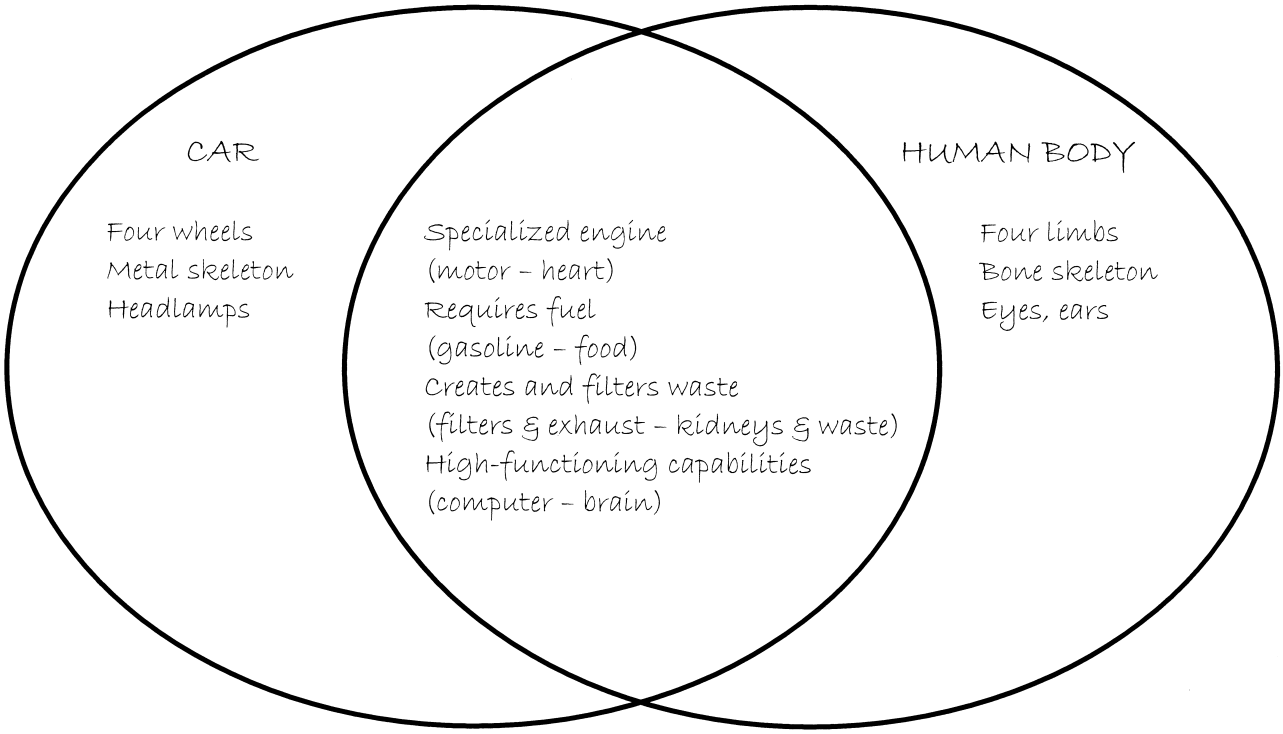
Example:

The performance of a car is very much like that of the human body. Where the car makes use of a pump to distribute the fuel needed for movement, the body uses a specialized heart. Where the car's fuel is gasoline, the body's is food; a car utilizes filters just as the body has an entire waste system, including kidneys; and the car releases exhaust, just as the human body rids of waste.

With a little imagination, you can probably create metaphors for nearly every subject you teach. When new material is presented as being quite familiar to something they already know, students can use that connection later to recall information accurately.

The real key is in teaching your students to use metaphorical thinking in their own pursuits. How is what they are learning this day similar or different to something they

learned before? How does it compare to something they already know about? How is it like something from popular culture? Encourage your class to seek connections by asking, "Is what we're learning similar to when we studied _____?" By creating their own metaphors, students call upon their personal experiences, which they own and can easily recall. Using Venn diagrams can help in soliciting metaphors from your students. With a visual representation of how two subjects are alike and different, students can often take the concept and run with it. Below is an example of a Venn diagram using the same human body/car analogy.



One more note about using metaphors in your teaching and testing of new material. When material is tested in the same form in which it was presented, typically a verbal or written account of dates and places, students are encouraged only to memorize and regurgitate the information. They are not motivated to make any connections or engage in any new thinking. It isn't even necessary for them to understand what

they are regurgitating, which is why we see so often that immediately following an exam, students can no longer recall the material. The information has been purged from their memories. Test questions based on metaphors, however, are an excellent way to evaluate comprehension. Compare the following (from *Teaching for the Two-Sided Mind*):

> List the major events leading up to the French Revolution and explain their importance.
>
> *versus*,
>
> How was the period leading up to the French Revolution like the building up of a thunderstorm? Be sure to include in your analogy the major events leading up to the Revolution.
>
> A student might memorize the answer to the first question, but not the second. The analogy question requires that students not only know the events leading up to the Revolution but understand them well enough to explain their significance in terms of something else, in this case, a thunderstorm. (Williams, 1983, p. 71)

Make learning fun!

Another strategy you can use to remember information that has related pieces is to create a game of the material. This works great for memorizing capitals of states, countries of continents, specific animals of a species, or any other material that includes two groups of information that are related to each other. Matching games like "Concentration" (some people call it "Memory") don't take long to make and you can solicit your students' help. Plus, they're fun to play! Just take some blank white index cards for recording your information. You can make each note card with words or drawings, whatever works best for you. Let's suppose your students are trying to memorize the state capitals. They should make a card for every state. They might use an outline of the state with the name included somewhere on or

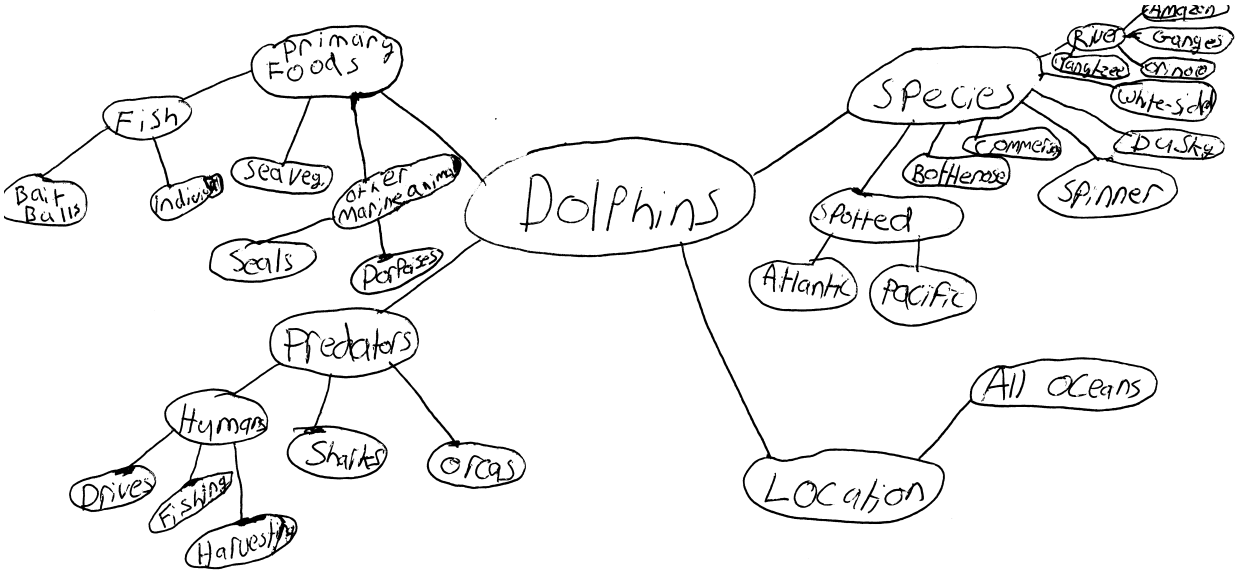
above the outline of it. Then, they should make a card for every capital. Have fun together making up silly stories if that helps them remember the names of the capitals. Remember the drawing of Salt Lake City, Utah on page 70? Your students should do the same thing to remember as many capitals and states as they can.

You can also use color to help students remember which capitals go with which states. Just have them include color in their drawings or put a dot of color somewhere on the state card and the same color dot on the card the matching capital card. This will be a good way to make sure their answers are correct while they play the game, too.

Once all of the cards have been created, lay them face down and play the traditional game of concentration where you match capital to state. (You'll probably want to start with just five or seven states and their capitals and gradually increase the number.) You'll need to lay out (upside down) several cards with capitals, then several cards with states. Turn two cards over, a match of a state and its capital means the student collects the cards. If there's no match, turn the cards back over and start again.

Here's one more idea to help you reinforce new information. In Chapter 4, I wrote about having students create webs of information to help organize their thoughts and notes before writing reports. They can use webbing to help remember new material, too. For example, let's say that in science class, your students have been studying dolphins. They are going to create reports and then give oral presentations on everything they have studied. They'll need to remember certain species, what they eat, where they live and what predators they face. The webbing, or notes, might look something like what one student did on the following page.

When they create a web that shows how the information is connected, they will have made a permanent mental picture of all the facts about the subject. They won't have to spend a lot of time memorizing notes, only the pictures they created.



More use of pictures

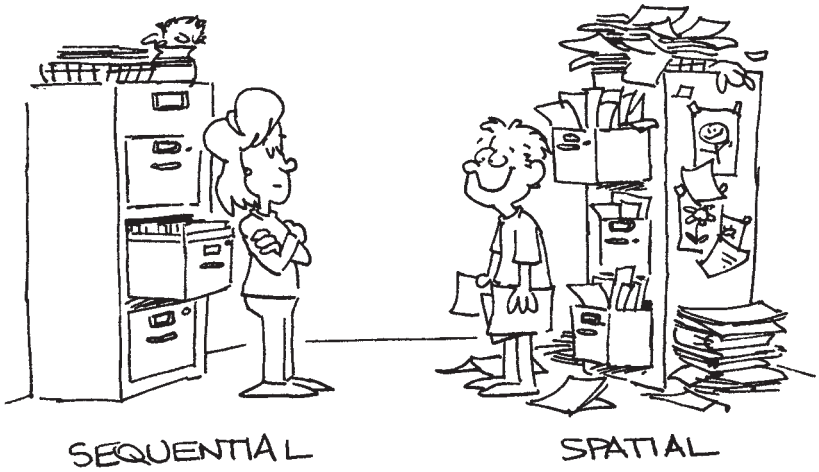
When students have difficulty with something you are presenting, try having them draw what they do understand. Visual-spatial students may be better able to draw what they know and then see how to fill in the blanks than they are able to discuss with you. Often, when visualizing an image, they may have trouble translating the gaps into questions. Their drawings can be in the form of diagrams, maps, structures, illustrations that communicate their understanding to a certain point, etc., it just depends what they're studying and how much they grasp so far!

Any time you encourage your students, whether they're visual-spatial *or* auditory-sequential, to incorporate images–those they draw, diagram, or mentally create–you've increased the likelihood they will retain new information, permanently.

Chapter Ten

Organizational Skills

Most, if not all, visual-spatial learners are accused of being hopelessly unorganized. But it has been my experience that many VSLs can find a needle in a haystack. I know of VSL kids, for example, with an uncanny ability to locate just the perfect LEGO™ piece even though their bedrooms or play areas may look as though a tornado has hit them!



It is important to note in the illustration above that, as long as each person is able to find exactly what he or she needs, in a reasonable amount of time, then neither one's method of organization is better than the other's. This is an area where, "to each his own," is the rule. If visual-spatial students (like the person on the right) were forced to "organize" the way the person on the left has done, they would likely never find another document again. The new system of organization would be completely foreign and these students would no longer be able to see just where every item is located.

However, if your VSL students find that they are losing important paperwork, notebooks, pencils, or anything else, they need to develop a better system. The new method must be their own, though. It simply will not work for the student to become organized under somebody else's system. If you think green folders are what students should use for science work, but green is meaningless to your students for remembering science, that will not be effective. I've included some Color Preference Surveys on the next pages (and on the CD) that you can use with your students to determine what colors they associate with certain subjects. You can then supply each student with the appropriate folders, files, colored envelopes and index cards, Post-It Notes, or other organization tools to help them start getting organized. If your classroom budget doesn't allow you to purchase colored supply items, ask your students to visit office supply stores at the beginning of the school year and include what they'll need in the classroom on their supply lists.

There's a reason why so many organizational products have come on the market in recent years. They must be the inventions of visual-spatials to help themselves and others who think and learn like they do! Your students can also use color for specific topics within a subject. For example, within a student's study of history, a single color can be used to take notes (on colored note cards) or highlight text (with colored Post-It Notes) for each category of information they are to learn, including important dates, people, events, locations, etc. You'll find a Color Preference Survey for this scenario, as well as a blank survey for other subjects, on the following pages and on the CD!

Linda Leviton is a visual-spatial learner and a member of the Visual-Spatial Resource Access team. I asked her how she helps VSL kids get organized. Here's what she wrote:

> VSLs are either horizontal or vertical organizers...if they are horizontal, they need a long table (preferably not deep) to put out (and leave out) works in process. If they are vertical, they need places to create stacks. I bought

myself one of those paper sorters with cubbies and have it right next to my computer (with labels for each section) and that's how I do it.

As for schoolwork, I have one word for you...pockets. Forget binders and putting holes in things. They need something they can shove papers into, and if you color code the pockets you have a better chance of the right paper getting into the right pocket. My preference is a folder with each class having its own colored pockets (one in front and one on back)...front is for current work or something to be turned in, back is for reference or past work. Just don't expect them to punch holes or get papers in sections that involve opening or closing anything; stuffing is what they do best! (L. Leviton, personal communication, May 31, 2004)

_____
Student Name

Color Preference Survey

What color do you associate with each of the following subjects? Use each color only once.

Red **Blue** **Green** **Yellow** **Purple** **Orange**

Subject	Color
Math	_____
History	_____
Spelling	_____
Science	_____
Homework	_____
_____	_____

_____
Student Name

History Color Preference Survey

What color do you associate with each of the following topics? Use each color only once.

Red **Blue** **Green** **Yellow** **Purple** **Orange**

Topic	Color
Important Dates	_____
Important Names	_____
Events	_____
Locations	_____
Other	_____
_____	_____

_____
Student Name

Color Preference Survey

What color do you associate with each of the following topics? Use each color only once.

Red **Blue** **Green** **Yellow** **Purple** **Orange**

Topic	Color
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

You read earlier that visual-spatial learners generally do not have a very good sense of time. These are the kids that wait until the 11th hour on a two-week assignment. Two weeks sounds like plenty of time, but then, the night before a due date, they're the ones that haven't completed the reading or the research! Show your students how to use a planner, especially one that offers week-at-glance and month-at-a-glance pages. They should use their planners to write down every important date, from field trip days to long-term assignments, holidays and other days off, even personal appointments and family commitments. I've found that having my kids write a due date for assignments three to four days before the actual due date has helped avoid last minute all-nighters. The extra built-in days allow time for editing, revisions, etc, and a more relaxed approach to the deadline. Keeping an organized planner helps visual-spatial learners get a better feel for how long a "two-week assignment" truly is. The month-at-a-glance pages allow them to see how long until Christmas, the last day of school, their birthday and other events they are anticipating.

To help your students (especially the "I'll be there in just a minute" kids) better understand the passage of time, try using an inexpensive minute glass. You can find these as one, three or five minute glasses or use ones from game sets. Set the timer up while they work or play and they can glance at and note the passage of various intervals of time. After awhile, they may be able to better sense when a certain amount of time has elapsed.

Creating processes

"*A place for everything and everything in its place*"–not easy for visual-spatial kids, but a tip that will last them a lifetime. Adults seldom misplace car keys because many of us learn to place them in the exact same place every time we come home. Help your students create these kinds of processes in the routine of their day so that they can get and stay better organized. One process might include an in-box for all homework assignments located at the door so that as they

walk in, it's the first thing they attend to, before they are seated. Another helpful process might be putting books and other homework immediately in a backpack or special folder to take home so they don't forget and leave those items in class. With a bit of trial-and-error to see what works and what doesn't, you can get your students organized and help them stay that way!

Chapter Eleven

Helping Your Students Stay Focused

For many VSLs the stuff that's really difficult for most people is quite easy to them. But then the material that other kids catch onto quickly is really tough for them. This is because challenging new material flips the "on switch" of the right hemisphere of the brain. When your VSL kids dive into something that's new and interesting, the right side of the brain is suddenly charged and ready to go. They can't zone out or doze off if what they are learning is new, interesting, funny or challenging. The right hemisphere has to stay in the act and it's happy to do so! But the minute the learning becomes boring, or is strictly words coming at them, they might as well get out a pillow and fall asleep, or start pestering their neighbor. Here's what I tell the kids in my workshops; I hope you'll allow some of these strategies in your classroom:

"There's some good news and some not-so-good news. Here's the not-so-good news first: There will be some class or lecture or boss or *somebody* that you absolutely must pay attention to no matter how incredibly boring you think they are. Your grade or job or raise will depend on it. It's impossible

to avoid such a situation. It's bound to happen. It happens to everyone.

The good news is: Every individual is in charge of his or her own right hemisphere! Each of us decides whether it's naptime or time to wake up and get in the game. The right hemisphere wants something more to do than just hold up the other side of the brain! So give it the opportunity."

Then I offer the following tips for keeping their attention focused:

- Take your notes in pictures. Even if the notes are not required or needed, just draw images of what the speaker is saying. These don't have to be elaborate or even artistic; just get involved in really listening to the words so you can create matching drawings.

- Whether you're taking notes in pictures or words, use colored markers or an ink pen that lets you change colors. Use a different color each time a new bit of information is introduced or each time a different subject is mentioned. Using color will help you to remember the notes if you are quizzed later. You'll be able to see the notes, rather than trying to remember the words.

- Make a movie in your mind of what is being said. Closing your eyes in class may not be a good idea, but try to get enough information from the lecture that you can create a movie from it. Then, you can rewind your movie and play it over and over.

- Try doodling to keep you focused, even if the doodles don't have anything to do with what you are listening to. Sometimes the simple act of doodling is enough to keep your attention focused on what the speaker is saying.

- Bring a small object to fidget with while you are listening. A hackey sack ball or stress ball might

work, or a balloon filled with a flour-sugar mix (and tightly sealed!), or any other small, easily manipulated object you can find. Just don't let it distract you and don't bother anybody else with it. Use it only to help you concentrate on the words of the lecture so that you can create mental images.

- Ask for an overview. The brain of a visual-spatial learner prefers big picture information first, so ask for it. Then, as you're listening to the lecture, you'll know where the talk is headed. You can even take your notes (in words or pictures) in the margins of the overview, filling in the details from what the speaker says to match the outline given to you.

- Stay on top of the lecture by trying to predict where the speaker is going. What is the main point? What are the important facts? If you were to stand up and quiz the rest of the class, what would you put on the test?

Having a fidget to manipulate, as mentioned above, often works to keep squirmy kids seated properly. I once worked with a class of 5th graders, most of whom rarely sat with all six legs (four from the chair and two from the student) on the floor. I convinced the teacher to allow each student to have a fidget, in this case, a balloon filled with a 2:3 mix of sugar and flour. The rules for keeping a fidget were simple: No one can know you have it (keep it quiet and hidden in your hand), it cannot ever be used as a weapon and it cannot be opened. One fidget was given to each student. The teacher was stunned to discover that the fidgets really worked. Just by having something small to massage in their hands, the students who before had difficulty remaining seated properly, were now able to do so. (The students who sat properly before the introduction of the fidgets, the ones who really didn't need fidgets, soon lost theirs or left them in their cubbies.) Toward the end of the school year, some of the students were able to give up the fidgets yet remain seated properly and only two students continued to use the fidget through the

final semester. This is just one way you can easily accommodate the needs of the kinesthetic students in your class and it doesn't disrupt others nor detract from your ability to teach. I've included a contract for the Classroom Use of Fidgets for you to use with your students and a log to track its effectiveness on the next page and on the enclosed CD!

Agreement for Classroom Fidget Use

I, _____, request permission to use a classroom fidget under the following conditions:

1. That no one shall know I have said fidget (I shall keep it held quietly in my hand and never use it as a weapon or noisemaker) and,
2. That I shall be responsible for maintaining the integrity of said fidget by not allowing it to break open or become lost.

_____ _____

(Signature of student) (Signature of teacher)

Fidget Log

Use this log to record those students under contract for Fidget Use and to monitor the effectiveness of this strategy. The Fidget is to be used to help the student remain seated properly and to aid in focusing attention. Record reason for contract and any behavior changes observed.

Student's Name	Contract Date	Contract Initiated Because...	Behavior Changes

Doodling is another effective way for visual-spatial students to stay focused on what they are hearing. The doodles don't have to be related to what they are listening to; just concentrating on what they are drawing helps many students retain what they are hearing. Allow your students to doodle as long as they adhere to the terms of the contract included on the next page. If you track the success of their recall when they are allowed to use this technique on the log that follows the Doodling Contract, I think you'll be surprised. As with the fidgets, the kids who don't need to doodle to focus will quickly drop it, but those who find it helpful will likely keep it as a strategy they use throughout their academic careers.

Agreement for Classroom Doodling

I, _____, request permission to doodle during class under the following conditions:

1. That my doodling shall not distract myself or my classmates from learning and,
2. That I shall be responsible for keeping up with all required notes and maintain a passing grade in all subjects.

_____ _____

(Signature of student) (Signature of teacher)

Doodling Log

Use this log to record those students under contract for Classroom Doodling to monitor the effectiveness of this strategy. Doodle contracts should be used for students who need help focusing. Record the reason for the contract and any behavior changes you notice.

Student's Name	Contract Date	Contract Initiated Because...	Behavior Changes

Another consideration for kids who have difficulty staying seated properly is to allow them, one at a time, to pace at the back of the room every so often. Initially, this suggestion is often met with complaints from other students, but eventually, as with the fidgets, only those who truly need this moment of movement will take advantage of it. I think you'll find that when you allow students this kind of freedom, it will not be abused and you'll have students who are better able to return to their seats and stay focused on your lessons. Plus, there is a substantial amount of research to support incorporating movement into your lesson plans. The same area of the brain that processes movement, the cerebellum, is responsible for processing learning.

> When we keep students active, we keep their energy levels up and provide their brains with the oxygen-rich blood needed for highest performance. Teachers who insist that students remain seated during the entire class period are not promoting optimal conditions for learning. (p. 66, Jensen, 2005)

> Physical movement such as standing, stretching, walking, or marching can increase brain amine levels, which can help improve attentional focus. As a general policy, if students feel drowsy, they should be allowed to stand at the back of the room...provided they do so without attracting attention to themselves. (p. 51, Jensen, 2005)

The research also demonstrates a strong relationship between movement and language, movement and memory, as well as movement and attention. Here are some easy ways to incorporate movement in your class:

- Passing the buck: toss a Hackey Sack™ or small ball to the student who is to answer the next question
- Take a group walk to "digest" new material
- Role play, act out and dramatize anything and everything!

- Hands-on activities–find a way to get them "doing" the lesson
- Incorporate stretching exercises as a breather between lessons
- Pair or group students in various corners of the room and set them to work creating jingles for information to be memorized (like state capitals!), or making up games with the material
- Allow "walkabouts" for those that need more movement. You'll find a contract for "Classroom Walkabouts" and a log for you on the following pages and on the CD

Agreement for Classroom Walkabouts

I, _____, request permission to quietly leave my seat and pace at the back of the room during class under the following conditions:

1. That my movement shall not distract myself or my classmates from learning and,
2. That I shall be responsible for keeping up with all required notes and maintain a passing grade in all subjects.

_____ _____

(Signature of student) (Signature of teacher)

Walkabout Log

Use this log to record those students under contract for Classroom Doodling and to monitor the effectiveness of this strategy.

Student's Name	Contract Date	Contract Initiated Because...	Behavior Changes

Chapter Twelve

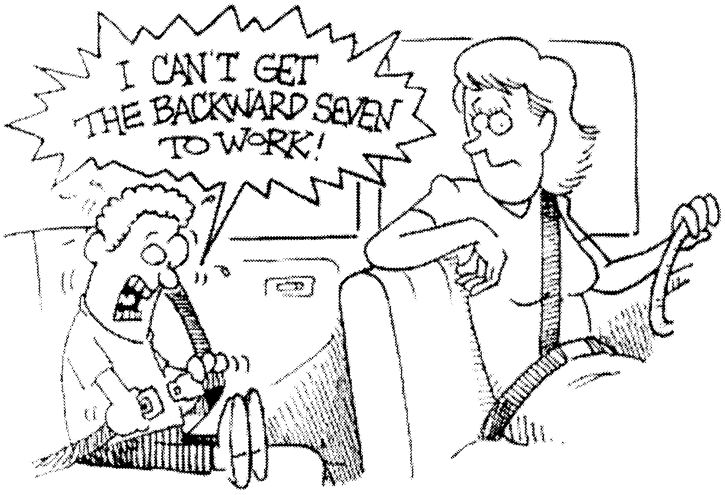
The Dreaded Timed Test

Have you ever found yourself searching for just the right word as you're speaking? Or the one word that truly matches the picture in your mind? This is precisely what happens to visual-spatials, nearly every day. The process for a visual-spatial learner to translate mental images into words (or numbers) is a lot like a computer downloading graphics. If you've ever downloaded a photograph on your computer, you know that it typically takes longer to bring up images than it takes to bring up text, especially if you still have dial-up! Not only must VSLs "download" their mental images, they then have to convert them to words. When there's the pressure of a time limit, it can be particularly challenging, if not impossible, to do.

Timed tests are being seriously questioned. In fact, several states are moving toward untimed assessments. Mel Levine (2002) writes in *A Mind at a Time*:

> …as kids get older, output controls function slower and slower and slower. In other words, well-controlled output requires adolescent minds to work slowly, to be reflective rather than impulsive, to take their time and not do the first thing that comes to mind. This is ironic, of course, since our high schools force our kids to do everything as fast as possible. They have to write quickly, think fast, remember on the spot, sprint through timed tests, and meet tight deadlines. This frenzied pedagogical rhythm is totally contrary to what the students' brains are striving to become…I think we should reward adolescents for taking as much time as they need to do a good job. Most tests should be untimed, or else students should be allowed to do as much as they can do well… (p. 84.)

I have a funny story for you about my very visual-spatial son. One day, when he was about seven years old, I was backing out of the driveway and he began panicking saying, "No! I'm not ready, don't go!" I called back, "What's wrong?" Matt hollered, "I can't get the backward seven to work!" I kept backing up while I was thinking, "Backward seven? What is it? How does it work? And why does he need it?" As I started to drive forward, the panic level in his voice started rising and he began pleading with me not to go. When I finally got to the stop sign, I looked back to see that he couldn't get his seat-belt fastened. From Matt's point of view, his seatbelt was clearly a backward seven!



Because Matt could only see the picture in his mind and because there was pressure for him to tell me what was wrong (he knew better than to be in a forward-moving car with no seatbelt on), he could not translate his picture into words. He was left with "backward seven" because he couldn't find the word, "seatbelt," fast enough to get me to stop the car. If you consider that a picture is worth a thousand words and your visual-spatial students are struggling to find just the one word that will match what you seek, you begin to understand the problem. It's not that these children are in any way slower than their auditory-sequential counter-parts–it's that they're working twice as hard to translate their mental images.

Such is the scenario when presented with timed tests. Most VSLs can't translate their mental pictures into words (or numbers, if it's a math test) very quickly when they are under pressure knowing they have a limited amount of time to get out the correct answer. They have an image readily available to them, but they are panic-stricken trying to translate that image into the right answer.

If you want your students to gain experience with timed tests, try some of the tips below to help speed up their translation time:

- Play games that require the players to answer within a specified time. Cranium™, Scattergories™, and Boggle™ are good examples of games that come with timers.
- Add a timer to a favorite game. Putting a time limit on Scrabble™ or Upwords™ would provide practice in taking a timed spelling test. Adding a minute glass to Yahtzee™ may help with timed math tests. You can use a minute glass (mini hourglass) or quiet kitchen timer to limit the amount of time.
- Play Pictionary™ to practice translating words into pictures, then back into words. Add a time limit to the game, too. Charades is a fun game to play where players start with a word, and then act it out in order to get other players to say the word.
- Games like "I'm Going on Safari" where players think of what they'll bring in alphabetical order give practice in translating images to words. The first player says, "I'm going on safari and I'm going to bring an apple (anything that starts with the letter

"a"). Then the second player says, "I'm going on a safari and I'm going to bring an apple (or whatever the first player said) plus a beagle (anything that starts with the letter "b"). And so on, through the alphabet. This requires players to keep words (or pictures they must translate into words) in their minds through the entire game/alphabet. Add a time limit to thinking up a new word and remembering the entire list.

If the ticking of a timer bothers your students, make sure you use a sand-filled minute glass instead. These can be found in many games and game stores in two or three minute versions.

I understand the desire to prepare students for the future timed tests of their lives, especially state standards tests, the SAT and ACT, etc. (By the way, a number of states have eliminated the time component of their state assessments! Can it be long before test constructors of every state understand the disadvantage of a timed test to visual-spatial learners?) But, if you're still using Mad Minutes in the classroom, I would like to invite you to go back to Chapter 8 for tips on teaching math facts in a more VSL-friendly way and to drop Mad Minutes altogether. Help your students to speed up the translation time from their images to words and numbers, not just the speedy recitation of facts.

Chapter Thirteen

Creating a Visual-Spatial Classroom

I hope that the real life stories of visual-spatial kids who've found that these differentiation strategies helped them succeed in the classroom convince you to try them with your own students. Some of the tips, like using fantasy or incorporating metaphors, may take more preparation time than others. Some of the recommendations, like offering Alternative Assignments to traditional book reports and research papers may mean more work for you in the evaluation and assessment process. But, most will add fun and entertainment to your day and lessons. All will make the learning more meaningful and permanent for each and every student you teach.

If you feel you can't begin incorporating visual-spatial friendly strategies for the whole class right away, try some of these ideas with just one student who is failing. See what happens.

If you're ready to start creating a visual-spatial classroom right away, I applaud you! You will be immensely satisfied with the results. You will learn along the way what works, what doesn't and you will probably come up with many of your own classroom strategies. I'd love to hear them! You can e-mail me with questions or to share your ideas at alex@visualspatial.org. Be sure to visit our website, Visual-Spatial Resource www.visualspatial.org, where you'll find new ideas being posted all the time.

As you embark on reinventing your classroom, differentiating for the visual-spatial learners, and making it a more successful environment for all your students, here are some simple guidelines to ask yourself:

1. Am I presenting the material visually?
2. Are there additional maps, diagrams, charts, photos, hands-on activities or other materials I should incorporate?
3. Am I giving students enough time?
4. Are there opportunities for students to demonstrate mastery in visual-spatial friendly ways?
5. Am I successfully differentiating by honoring each student for his or her preferred learning style?

If you find that you are having difficulty adding strategies that are visual-spatial friendly, the following list may help you come up with just the technique you need:

Overhead projector - what can you present on a transparency?

Computer - how can your students use classroom computers, the Internet, and computers at home to reinforce this lesson?

Diagrams, charts, graphs, movies, posters - how else can you present this material?

Maps, globes, atlases - how else can you *show* where?

Timelines, hands-on activities, field trips - how else can you *show* when or who?

Colored pens, folders, Post-It Notes, index cards - how else can you help students get organized?

Manipulatives, games, demonstrations, experiments, models - how else can you *show* students?

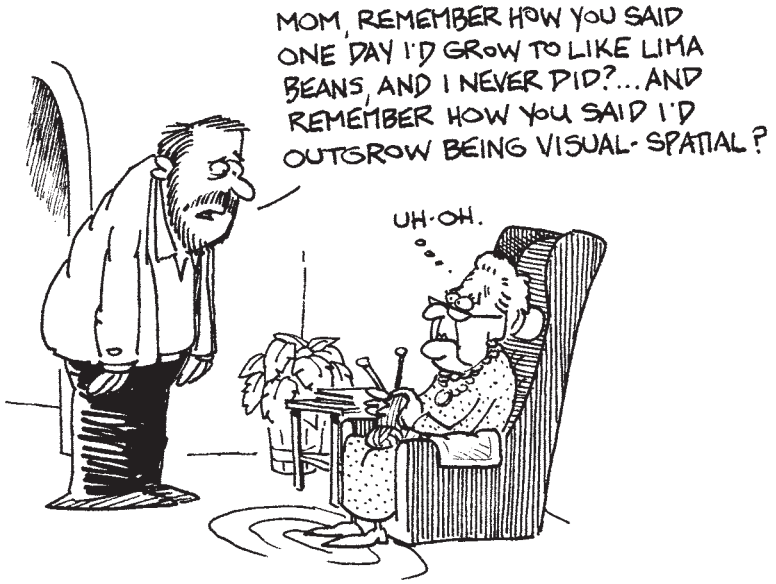
Dramatizations, role-playing, fantasy - how else can you engage students?

Metaphors, Venn diagrams - how else can you help students see connections?

Dioramas, storyboards, puppet shows - how else can students *show* mastery?

Fidgets, doodling, walkabouts - how else can you accommodate kinesthetic needs?

I'd like to encourage you to incorporate Student Portfolios in your class. These should be folders each student designs and determines what goes into. It should be a reflection of their best work–not necessarily what they received the highest grade on, but that work of which they are the most proud. It could be something like a spelling test they took after they tried a new, visual-spatial technique, or a report they wrote by starting with a web. I've included a Log for your students to record their work, why they selected it to be included in the Portfolio and the date. Encourage parents to come in and review their student's portfolio on occasion or use the Portfolio during conferences.



These visual-spatial students of yours will always be picture-thinkers. They need to be motivated to use their talents and gifts, even after they leave your class. Encourage them to consider careers in higher level mathematics, science, inven-

tion, architecture, surgery, cartooning, aeronautics or cartography. All of these are specialties that make use of their ability to think in multiple dimensions and from varied perspectives.

School will probably be the only time visual-spatial students feel they are not as bright or capable as their auditory-sequential friends. Beyond this time, in college and in the careers they choose, these children will grow to feel the strengths of their right hemispheres are truly a gift. In creating a visual-spatial classroom, you can help them understand their gifts earlier and enjoy success in so many areas beyond the Three R's of 'ritin', readin' and 'rithmetic. Be their cheerleader, their mentor, and the adult in their lives, other than their parents, that truly cares about them. The strong emotional bond many visual-spatial students feel about the one teacher that truly understood them lasts their entire lifetime.

Be that teacher.

Portfolio Log

Use this log for students to record the work they select as their best examples.
Invite parents to come and review the log.

Example of My Work & Why I Chose It	**Date Entered**

References

Davis, R.D. (with E.M. Braun). (1994). *The gift of dyslexia*. Burlingame, CA: Ability Workshop Press.

Golon, A.S. *Showing your work when there's nothing to show*. Gifted Education Communicator, 36 (3 & 4) 10-13, Fall/Winter, 2005.

Golon, A.S. (2005). *If you could see the way I think: A handbook for visual-spatial kids*. Denver, CO: Visual-Spatial Resource.

Hadamard, J. (1949). *The psychology of invention in the mathematical field*. Princeton, NJ: Princeton University Press.

Jensen, E. (2005). *Teaching with the brain in mind*. (2nd ed.) Alexandria, VA: ACSD.

Levine, M. (2002). *A mind at a time*. New York: Simon & Schuster.

Maxwell, E. (2003). *Wholes and patterns: Reading help for struggling gifted visual-spatial learners*. Gifted Education Communicator, 34 (1) 23-24, Spring, 2003.

Ornstein, R. (1997). *The right mind: Making sense of the hemispheres*. New York: Harcourt Brace.

Pink, D.H. (2005). *A whole new mind: Moving from the information age to the conceptual age*. New York: Riverhead Books.

Ringle, J., Miller, S., & Anderson, R. (2000). *Reading achievement results integrating Davis learning strategies in the special education and special reading classroom. Year 1 - 1999-2000*. Report for Sherrard Elementary School. Sherrard, IL: Authors.

Sax, L. (2005). *Why gender matters: What parents and teachers need to know about the emerging science of sex differences*. New York: Doubleday.

Silverman, L.K. (2002). *Upside-down brilliance: The visual-spatial learner*. Denver, CO: DeLeon Publishing.

Williams, L.V. (1983). *Teaching for the two-sided mind: A guide to right brain/left brain education*. New York: Simon & Schuster.

About the Author

Alexandra "Allie" Golon is Director of the ***Visual-Spatial Resource***, a subsidiary of the Institute for the Study of Advanced Development, in Denver, Colorado. As a founding member of the Visual-Spatial Resource Access Team, a former G/T teacher and homeschooling parent to two visual-spatial learners, Allie brings a wealth of experience to her books, *Raising Topsy-Turvy Kids: Successfully Parenting Your Visual-Spatial Child*; *If You Could See the Way I Think: A Handbook for Visual-Spatial Kids* and *The Visual-Spatial Classroom: Differentiation Strategies that Engage Every Learner*. Allie has been invited to present on parenting and teaching visual-spatial learners at state, national and international venues. She has counseled dozens of families regarding various homeschooling issues and harmoniously parenting visual-spatial learners and has appeared on talk radio programs and in print media. Allie can be reached at alex@visualspatial.org.

What people are saying about Allie's work with visual-spatial learners:

From a participant in the If You Could See the Way I Think children's workshop in Melbourne, Victoria, Australia:
Dear Allie,
The things I learnt at your presentation I did not know before. It helped me understand why I'm bad at maths. It made me feel special. Thank you for helping me realize who I truly am.

From a parent who attended a Raising Topsy-Turvy Kids seminar in Christchurch, New Zealand:
First time in a long while that I have sat totally mesmerized…thank you so much.

From a consultation client in St. Louis, Missouri:
I just wanted to say thanks for all your help and suggestions! It's amazing to me that I have been to multiple doctors... Psychiatrists, Psychologists, Neurologists and Pediatricians for 6 years now to try and get some help for J, not to mention the thousands of dollars we have spent trying to get some answers and after a 1 hour phone conversation with you I feel like I FINALLY have some answers! THANKS SO MUCH!

From a public school district in Edmonton, Alberta, Canada
Your sensitivity and perceptiveness are so evident. You are so in tune with people. Thanks for sharing your wisdom and warmth with us.

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To learn more about the visual-spatial learning style, or for information on other books, presentations and consultations, please visit ***Visual-Spatial Resource*** at www.visualspatial.org or write Allie at alex@visualspatial.org.

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