

***Equal Access, Equal Treatment:  
Raising Awareness about people with disabilities and their struggle for equal rights.***

**Table of Contents**

Lesson: Understanding Learning Differences.....	2
Worksheets/Handouts/Slides:	
<i>Learning Styles Questionnaire</i> .....	9
<i>What is Your Dominant Learning Style</i> .....	10
<i>Mystery Photo</i> .....	11
<i>Brain Scan</i> .....	12
<i>Learning Disabilities</i> .....	13
<i>Matt's Story</i> .....	16
<i>Writing Activity</i> .....	18
<i>Decoding Activity</i> .....	19
<i>Sequence Activity</i> .....	21
<i>Who Am I?</i> .....	22
<i>Learning Disabilities: Types, Symptoms, Diagnosis, and Causes</i> .....	24

*Equal Access, Equal Treatment:*

*Raising Awareness about people with disabilities and their struggle for equal rights.*

### **Lesson #1: Understanding Learning Differences**

**Rationale:** The purpose of this lesson is to increase understanding about learning differences and empathy for people who have them. Experts estimate that 6 to 10 percent of the school-aged population and nearly 40 percent of the children enrolled in the nation's special education classes have a learning disability; yet most students don't understand what learning disabilities are and those who learn differently frequently bear the stigma of being thought of as "slow," lazy, or "weird."

During this lesson, students explore their own learning styles as the basis for understanding learning differences. Through simple brain research and articles, students learn the facts about learning differences and through experiential exercises and personal testimony, students develop an appreciation for others with learning disabilities. The lesson concludes with a brief look at prominent historical and contemporary figures with learning differences and multiple intelligence theory in order to encourage an appreciation for brain diversity and emphasize the broad continuum of strengths and talents inherent in human beings.

#### **Objectives:**

- Students will receive information about learning styles and identify their own dominant learning styles
- Students will discover what learning disabilities are, how they are caused, and how they impact individuals
- Students will experience various learning tasks that will increase their understanding of learning disabilities and their empathy for those who have them
- Students will learn about successful people with learning disabilities and understand the idea of multiple intelligence

**Age Range:** Grades 6 - 9

**Materials:** chart paper, markers, overhead or LCD projector, small hand mirrors (optional)

**Time:** 2 – 2½ hours or 3 – 4 class periods (if less time is available, conduct only Parts II and III, which can be completed in 50 – 90 minutes or 2 class periods)

**Techniques and Skills:** analyzing visual images, brainstorming, cooperative group work, critical thinking, forming opinions, interpreting personal testimony, large and small group discussion, reading skills, writing skills

**Key Words:** attention deficit hyperactivity disorder (ADHD), auditory, brain diversity, brain scan, compensate, confidence, decode, dominant, dysgraphia, dyslexia, dysnumeria,

empathy, genetic, heredity, Individualized Education Program (IEP), interpersonal, intrapersonal, kinesthetic, linguistic, metaphor, learning difference, learning disability, learning style, multiple intelligence, phoneme, phonics, remedial, Resource Room, self-esteem, spatial, verbal, visual

### **Procedures :**

*Note:* In order to appropriately define language and guide student discussion on disability issues, it is recommended that teachers carefully read ADL's resource sheets on disability prior to facilitating lessons with students. See the Resources section in the right-hand toolbar of this webpage for further reference.

### **PART I: Learning Styles (30 minutes)**

#### **Materials:**

Prior to the lesson, make the following preparations:

- Prepare three sheets of chart paper and title them "Visual," "Auditory," and "Kinesthetic." Divide each sheet into three columns and label them "Studying for a test," "Learning a new game," and "Finding a new place."
- Photocopy a class set of the following handouts back-to-back: [Learning Styles Questionnaire](#) and [What is Your Dominant Learning Style?](#)

Begin the lesson by telling students that you are going to administer a quiz, but not to worry—it is the kind with no right or wrong answers; in fact, they won't even have to hand it in. Tell students that the survey will help them to explore the style of learning that is most effective for them.

#### **-Survey-**

-Distribute the Learning Styles Questionnaire and give students 5-10 minutes to fill it out.

*Note:* Direct students to look only at the questionnaire and not to read the information on the back of the sheet.

**\*\*While students are working, post the three sheets of chart paper ("Visual," "Auditory," and "Kinesthetic") in different parts of the room.**

When students have completed tallying their responses at the bottom of the questionnaire, instruct them to turn their pages over and read, [What is Your Dominant Learning Style?](#)

#### **-Small Groups-**

Direct students to move to the sheet of chart paper that reflects their dominant learning style (according to the questionnaire), and select a recorder for each group. Ask each group to discuss how they would typically approach each of the learning tasks listed on the chart paper and what strategies for taking in new information usually work best for them. As the group brainstorms, the recorder should list responses.

For example, the "Visual" group might list the following responses:

Studying for a test	Learning a new game	Finding a new place
Reading notes	Looking at diagrams and instructions	Reading or drawing a map
Creating charts, diagrams	Watching others play	Having someone show me the route
Creating pictures in my mind to help me remember facts	Watching a video or TV program	Using landmarks to remember the way

Note: If dividing students into three large groups presents management difficulties, consider creating two groups for each learning style (six groups in all) or facilitating the following discussion as a whole class.

### **-Discussion-**

Bring the whole class back together and allow each group approximately two minutes to share their responses. Use one or more of the following questions to process the activity:

- How were the results of the questionnaire consistent or inconsistent with your own ideas about the way you learn best?
- Did you discover anything new about your learning style? What did you learn?
- Will the questionnaire change the way that you approach new tasks? If so, how?
- Why do you suppose that different people learn in different ways?
- Do you think it would be better/easier if everyone learned in the same way? Why or why not?
- Is one style of learning better than another? Why or why not?

### **PART II: Understanding Learning Differences (20-40 minutes)**

Remind students that the learning styles questionnaire taken earlier highlighted our different ways of thinking and our various learning strengths and weaknesses. Point out that we all have different ways of learning, but that most of us are able to get by pretty well in school and in other learning situations. Suggest that some people's learning differences are more severe and interfere with their ability to read, write, speak, and perform other tasks that are expected of them in school and other learning situations. Tell students that when learning differences are this serious, they are often referred to as learning disabilities.

### **-Web Exercise-**

-Write the term, LEARNING DISABILITIES, in the center of a sheet of chart paper.

Ask students to share what they know about learning disabilities (definitions, types, what they have learned from their own experiences or heard from others, etc.) Write all of the students' responses at the end of spokes emanating from the center. Do not discuss or edit the responses at this time—simply write them down verbatim. Allow approximately five minutes for this webbing exercise.

### **-Discussion-**

Tell students that you are going to display a [Mystery Photo](#).

-Project the image (using an LCD projector or a color transparency), and challenge students to guess what it is.

After a few guesses, tell students that it is a picture of an adult brain and that the red segments represent areas that were active while a study subject performed a reading task.

-Project [Brain Scans](#)

Explain to students that a team of medical researchers at Georgetown University scanned the brains of 38 adults while performing reading tasks and that half of these people have dyslexia (a learning disability that makes learning to read difficult). Point out that the brain images reveal different regions of activation in people with and without dyslexia. Ask students what they think researchers learned from this.

Explain to students that researchers believe that dyslexia and other learning disabilities occur because of the way the brain is formed and the way it processes the information it receives. Emphasize that people with learning disabilities are not less intelligent than others, but that their brains may actually be “wired” differently. Explain that for this reason, many people prefer the term learning difference (able to learn in different ways) over learning disability (not able to learn). Though both terms are acceptable, encourage students to try and use the term learning difference in the future.

-Return to the web created earlier around the term, LEARNING DISABILITIES.

If students already noted brain or information processing differences, affirm their insight; otherwise, add this information to the web. If students included references to limited intelligence, cross them out, and ask if there are any other ideas that need to be rethought (e.g., people with learning disabilities are lazy, unmotivated, careless, etc.). Encourage students to return to the web as the lesson proceeds in order to correct misconceptions and to add new information that they learn.

-Distribute the articles, [Learning Disabilities](#) and [Matt’s Story](#). These articles can be read together in class or assigned as homework in order to increase students’ understanding about what learning disabilities are, what causes them, and how they impact students’ lives.

### **PART III: Building Empathy for People With Learning Differences (30-50 minutes)**

#### **-Reflection-**

-Ask for a volunteer to stand at the front of the classroom and read My Struggle aloud.

Tell students that it was written by a 9th grade boy with learning differences. Allow students a few moments to silently reflect on this piece of writing. Ask them to think

about one of the following metaphors and to discuss with a partner why Matt may have evoked this imagery to describe his school experience:

- a. tremendous, rocky mountain
- b. steep cliffs and jagged, slippery rocks
- c. grey and covered in dark, murky, cold clouds
- d. strong, howling, icy winds [that] contain frigid rain

-Allow a few students to share their thoughts with the whole class.

Tell students that, unlike physical disabilities, learning differences are usually invisible to us and it may therefore be harder to understand and empathize with the struggles of students like Matt.

### **-Activity-**

-Lead students through one or more of the exercises below, which will help them to reflect on what it might feel like to have a learning difference. Depending upon the time available and the maturity of your students, these exercises can be facilitated by the teacher with the whole class at once or experienced autonomously by students in pairs or small groups.

[Writing Activity: The Mechanics of Composing](#)

[Decoding Activity: Recognizing Phonemes](#)

[Sequence Activity: Multi step Problems](#)

-After students have experienced at least one of the exercises above, one or more of the following questions can be used to process their thoughts either through discussion or reflective writing:

- How did it feel as you tried to accomplish the task?
- How did time pressures or demands from the teacher/peers affect your ability to complete the task?
- How do you think you would feel if this were not just an exercise, but a consistent experience with school work?
- If you had a learning difference, how do you think it might impact your success at school, your self-esteem, and your relationships with others?
- Do you sometimes assume that a student with learning differences is lazy or “stupid”? Do you feel any differently now?
- Have you ever teased or excluded someone because of a learning difference? What might you do differently in the future?

## **PART IV: Multiple Intelligence (30-40 minutes)**

### **-Group Work-**

-Divide the class into groups of about four students. Give each group a copy of [Who Am I?](#)

Tell students that this handout contains brief biographies of successful people (living and dead) with learning differences. Challenge each group to identify as many of the prominent figures as they can.

### **-Discussion-**

-After about five minutes, bring the groups together to see if they were able to collectively identify all of them:

(Answer Key: 1. Tommy Hilfiger; 2. Richard Branson ; 3. Ann Bancroft ; 4. Pablo Picasso ; 5. Tom Cruise ; 6. Leonardo da Vinci; 7. Thomas Edison; 8. Whoopi Goldberg; 9. Patricia Polacco)

Note: If this activity is too difficult for your students, post the names of the figures in the front of the room and challenge students to match them with each biography rather than to come up with the names on their own.

Ask students if they were surprised to find any particular names among this list of people with learning differences. Ask if they noticed any commonalities among the profiles. Highlight that most of these individuals had very negative school experiences and were labeled by others as unintelligent and incapable; that many of the people in their lives were not able to see past their learning differences and appreciate their talents.

-Pose the following question:

*So, is a learning difference a problem with the individual, or a problem with the people and society around him/her?*

### **-Article Discussion-**

Suggest to students that it is important to address the issue of learning differences at both levels. Read aloud or paraphrase the following information from the article, [Learning Disabilities: Types, Symptoms, Diagnosis, and Causes](#) :

- “Students with learning differences will have difficulty in school, so they must get help to find other ways to learn. [At the same time,] American society does not provide enough educational opportunities for people who learn differently.”
- “Educational institutions can serve more people if they change to meet the needs of more types of learners. Dr. Mel Levine of the All Kinds of Minds Institute says that many children have brains that are wired differently...and so they learn differently. The problem is that standard schooling tends to assume that one kind of teaching will work for all kinds of students...In the best of all worlds, Levine would like educators to discover how each child learns best and what the individual’s strengths are...Every child can be successful in learning and in life, if someone just discovers and teaches to those strengths.”

Tell students that a well known psychologist named Howard Gardner has come up with a way to describe our different strengths and the different ways in which we learn.

-Distribute the handout, [Multiple Intelligence](#), and review it together as a class.

Point out that although school most often focuses on verbal and mathematical intelligence, there are many other ways of being smart and successful.

### **-Partners-**

Ask students to discuss with a partner which types of intelligence are exhibited by the figures in the [Who Am I?](#) activity from earlier. Ask them to discuss where they see themselves on this continuum of intelligence and what kinds of aspirations they have for the future that might capitalize on their strengths and talents?

Conclude the lesson by reminding students to be open-minded and respectful of people with learning differences, and to appreciate “brain diversity” just as they would racial, ethnic, or religious diversity. Leave students with the following food for thought from Dr. Gordon F. Sherman, an expert on learning differences:

“...brain diversity may benefit our species. History and science tell us environments inevitably change. Who knows what kinds of minds our species may need in the future? [Are learning differences] a biological mishap [or] nature’s design?”

### **Optional Extension Activities**

Follow up on the above exploration by reading aloud or assigning a book to students that addresses learning differences. Have students do reflective writing, develop book or research reports, read aloud to younger students, or engage in other projects that will deepen their understanding about learning differences. The following resources will help you to select appropriate titles:

- [Annotated Bibliography of Books for Middle Level Learners on Learning Differences and Disabilities](#)
- [Evaluating Children’s Books that Address Disability](#)
- [Web Links for Educators and Families About Learning Differences and Disabilities](#)

## Learning Styles Questionnaire

Name: \_\_\_\_\_

Check the items below that are true for you. You may check as many or as few that apply.

- It's easier for me to remember names than faces.
- I create pictures in my mind to remember names.
- I remember events better than names or faces.
- I buy clothes for comfort more than appearance.
- I buy clothes for appearance more than comfort.
- I prefer to stop and ask for directions when finding my way in a new place.
- I prefer reading a map when finding my way in a new place.
- I like physically active games.
- I enjoy crossword puzzles.
- I remember a zip code or phone number by saying it aloud.
- I use my free time for physical activities.
- I prefer newspaper over radio for keeping up with the news and current events.
- I prefer radio over newspaper for keeping up with the news and current events.
- I spend a lot of my free time on arts, crafts, model-making or mechanics.
- I like reading and writing games like scrabble or crossword puzzles.
- I prefer talking and listening games.
- I'm quick in learning a new physical skill.
- I'm an enthusiastic book reader.
- I enjoy talking on the phone in my free time.
- I prefer spoken directions when learning a new task.
- I follow written recipes easily when cooking.
- I tend to doodle and draw.
- I'm an outdoor person.
- I like to keep written records of things, such as a diary, journal, logbook, etc.
- I like to build, construct, and fix things.
- I prefer listening to a CD over reading the same material.
- When bored, I hum, sing, or engage others in conversation.

Now count up your responses.

How many of the visual items did you check? \_\_\_\_\_  
(Numbers 2,5,7,9,12,15,18,21,24)

How many of the auditory items did you check? \_\_\_\_\_  
(Numbers 1,6,10,11,13,16,19,20,26,27)

How many of the kinesthetic items did you check? \_\_\_\_\_  
(Numbers 3,4,8,14,17,22,23,25)

## What is Your Dominant Learning Style?

Name(s): \_\_\_\_\_

Learning styles are simply different ways of learning. Most learners use a combination of *visual*, *auditory*, and *kinesthetic* ways of receiving information. However, one or more of these styles is usually dominant. This dominant style defines the best way for a person to learn new information. This style may not always be the same for all tasks. Learners may prefer one style of learning for one task, and a combination of others for another task.

### Visual learners

- Visual learners learn best by seeing. They may need to see the teacher's body language and facial expression to fully understand the content of a lesson. They tend to prefer sitting at the front of the classroom to avoid visual barriers (e.g. people's heads). They may think in pictures and learn best from visual displays including: diagrams, illustrated text books, overhead transparencies, videos/DVDs, charts and hand-outs. During a lecture or classroom discussion, visual learners often prefer to take detailed notes to absorb the information. Visual learners may find something to watch if they are bored.

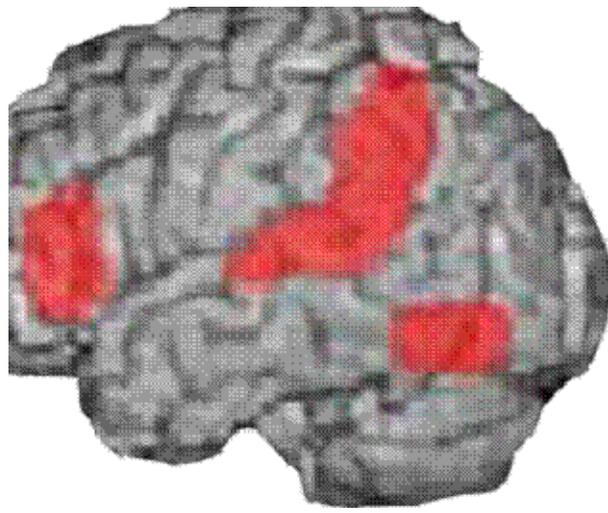
### Auditory learners

- Auditory learners learn best through listening—lectures, discussions, talking things through and listening to what others have to say. Auditory learners focus in on tone of voice, pitch, speed and other aspects of verbal presentations. Written information may have little meaning until it is heard. These learners prefer to sit where they can hear, but may not pay attention to what is happening up front. They may hum or talk to themselves or others when bored. Auditory learners often benefit from reading text aloud and using a tape recorder.

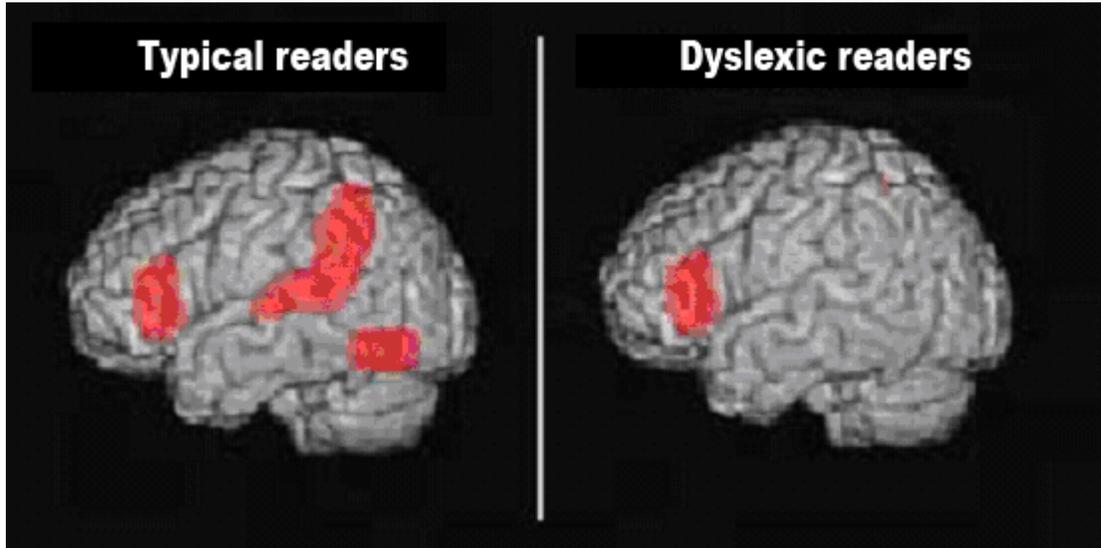
### Kinesthetic/Tactile learners

- Kinesthetic learners learn best through moving, doing and touching. They prefer a hands-on approach, actively exploring the physical world around them, and enjoy activities such as cooking, construction, and art. They communicate by touching and appreciate physical encouragement from others (such as a pat on the back). Kinesthetic learners remember what was done, but may have difficulty recalling what was said or seen. They may find it hard to sit still for long periods and may become distracted by their need for activity and exploration. Kinesthetic learners often need to take frequent breaks and may tinker or move around when bored. They may benefit from sitting near the door or someplace that allows them to easily get up and move around.

Source: Learning Styles and Multiple Intelligence, <http://www.ldpride.net>



Name(s): \_\_\_\_\_



A team at Georgetown University Medical Center in Washington , D.C. scanned the brains of 38 adults, half of whom had dyslexia—a learning disability that makes learning to read difficult and which experts estimate affects up to 17% of people in the U.S. While being imaged, participants performed tasks that required the ability to interpret the sounds, or the phonics, of language. The brain images reveal different regions of activation (red) in people with and without dyslexia.

The fact that dyslexia affects smart people (Albert Einstein was dyslexic!) once puzzled scientists. Many figured that their reading problems must be due to laziness. Brain pictures like the one above, however, have helped scientists to understand that dyslexia is about biology, not motivation.

Research shows that people with dyslexia use the brain regions that process written language differently than others. When most readers are asked to pronounce the word “bus” without the “b” sound, for example, they easily say “us,” and the brain pictures show their brains lighting up like pinball machines. The brains of people who can’t sound out words, however, show less blood flow to the brain’s language centers and less activity overall. Researchers are not sure what causes this problem, but without the ability to sound out words, the brain is stumped.

Some researchers have found that people with dyslexia can make up for the inactivity in the language part of their brain by using other areas, such as the region linked with spoken language in the front part of the brain. For example, people with dyslexia who say the words they are reading under their breath may be relying on this area to get through a passage of text.

Brain imaging technology and other research has helped scientists to understand that learning disabilities occur naturally in many people, and has enabled them to create better ways of diagnosing and treating the people who have them.

*Image courtesy of Society for Neuroscience and Guinevere Eden*



## Learning Disabilities

Noah felt like he was always hitting the books. While his friends were meeting for pickup soccer games after school, he was back home in his room reading and rereading the same material. But no matter how hard Noah studied, he had difficulty remembering things and his grades stayed average. Meanwhile, his friend Sean, who never seemed to study, always aced tests. It didn't seem fair.

Because Noah was so frustrated, his dad and teachers made an appointment with the school psychologist. She diagnosed Noah with a learning disability. Although Noah felt relieved to know what was going on, he was also worried. He didn't like the "disability" label. And he was concerned about what it might mean for his future. Would he be able to go to college and study engineering as he'd hoped?

### What Are Learning Disabilities?

For someone diagnosed with a learning disability, it can seem scary at first. But a learning disability doesn't have anything to do with a person's intelligence - after all, such successful people as Walt Disney, Alexander Graham Bell, and Winston Churchill all had learning disabilities.

Learning disabilities are problems that affect the brain's ability to receive, process, analyze, or store information. These problems can make it difficult for a student to learn as quickly as someone who isn't affected by learning disabilities. There are many kinds of learning disabilities. Most students affected by learning disabilities have more than one kind. Certain kinds of learning disabilities can interfere with a person's ability to concentrate or focus and can cause someone's mind to wander too much. Other learning disabilities can make it difficult for a student to read, write, spell, or solve math problems.

The way our brains process information is extremely complex - it's no wonder things can get messed up sometimes. Take the simple act of looking at a picture, for example: Our brains not only have to form the lines into an image, they also have to recognize what the image stands for, relate that image to other facts stored in our memories, and then store this new information. It's the same thing with speech - we have to recognize the words, interpret the meaning, and figure out the significance of the statement to us. Many of these activities take place in separate parts of the brain, and it's up to our minds to link them all together.

If, like Noah, you've been diagnosed with a learning disability, you're not alone. Nearly four million school-age children and teens have learning disabilities, and at least 20% of them have a type of disorder that makes it difficult to focus.

### What Are the Signs of Learning Disabilities?

You can't tell by looking that a person has a learning disability, which can make learning disabilities hard to diagnose. Learning disabilities typically first show up when a person has difficulty speaking, reading, writing, figuring out a math problem, communicating with a parent, or paying attention in class. Some kids' learning disabilities are diagnosed in grade school when a parent or a teacher notices a kid can't follow directions for a game or is struggling to do work he or she should be able to do easily. But other kids develop sophisticated ways of covering up their learning issues, so learning disabilities don't show up until the teen years when schoolwork - and life - gets more complicated.

Most learning disabilities fall into one of two categories: verbal and nonverbal.

People with verbal learning disabilities have difficulty with words, both spoken and written. The most common and best-known verbal learning disability is **dyslexia**, which causes people to have trouble

recognizing or processing letters and the sounds associated with them. For this reason, people with dyslexia have trouble with reading and writing tasks or assignments.

Some people with verbal learning disabilities may be able to read or write just fine but they have trouble with other aspects of language. For example, they may be able to sound out a sentence or paragraph perfectly, making them good readers, but they can't relate to the words in ways that will allow them to make sense of what they're reading (such as forming a picture of a thing or situation). And some people have trouble with the act of writing as their brains struggle to control the many things that go into it - from moving their hand to form letter shapes to remembering the correct grammar rules involved in writing down a sentence.

People with nonverbal learning disabilities may have difficulty processing what they see. They may have trouble making sense of visual details like numbers on a blackboard. Someone with a nonverbal learning disability may confuse the plus sign with the sign for division, for example. Some abstract concepts like fractions may be difficult to master for people with nonverbal learning disabilities.

A behavioral condition called **attention deficit hyperactivity disorder** (ADHD) is often associated with learning disabilities because people with ADHD may also have a hard time focusing enough to learn and study. Students with ADHD are often easily distracted and have trouble concentrating. They may also be excessively active or have trouble controlling their impulses.

## What Causes Them?

No one's exactly sure what causes learning disabilities. But researchers do have some theories as to why they develop. They include:

- **Genetic influences.** Experts have noticed that learning disabilities tend to run in families and they think that heredity may play a role. However, researchers are still debating whether learning disabilities are, in fact, genetic, or if they show up in families because kids learn and model what their parents do.
- **Brain development.** Some experts think that learning disabilities can be traced to brain development, both before and after birth. For this reason, problems such as low birth weight, lack of oxygen, or premature birth may have something to do with learning disabilities. Young children who receive head injuries may also be at risk of developing learning disabilities.
- **Environmental impacts.** Infants and young children are susceptible to environmental toxins (poisons). For example, you may have heard how lead (which may be found in some old homes in the form of lead paint or lead water pipes) is sometimes thought to contribute to learning disabilities. Poor nutrition early in life may also lead to learning disabilities later in life.

## How Do You Know If You Have a Learning Disability?

Just because you have trouble studying for a test doesn't mean you have a learning disability. There are as many learning styles as there are individuals. For example, some people learn by doing and practicing, others learn by listening (such as in class), and others prefer to read material. Some people are just naturally slower readers or learners than others, but they still perform well for their age and abilities. Sometimes, what seems to be a learning disability is simply a delay in development; the person will eventually catch up with - and perhaps even surpass - his or her peers.

But many people with learning disabilities struggle for a long time before someone realizes that there's a reason they're having so much trouble learning. For most people in their teen years, the first telltale sign of most learning disabilities occurs when they notice that there's a disconnect between how much they studied for a test and how well they performed. Or it may just be a feeling a person has that something isn't right. If you're worried, don't hesitate to share your thoughts with a parent or a teacher.

The first step in diagnosing a learning disability is ruling out vision or hearing problems. A person may then work with a psychologist or learning specialist who will use specific tests to help diagnose the disability. Often, these can help pinpoint that person's learning strengths and weaknesses in addition to revealing a particular learning disability.

## **Coping With a Learning Disability**

Although a diagnosis of a learning disability can feel upsetting, it's actually the first step in resolving the condition. Once an expert has pinpointed a person's particular problem, he or she can then follow strategies or take medicines to help cope with the disability. And taking steps to manage the disability can often help restore a student's self-esteem and confidence.

Some students who have been diagnosed with a learning disability work with a special teacher or tutor for a few hours a week to learn special study skills, note-taking strategies, or organizational techniques that can help them compensate for their learning disability. If you've been diagnosed with a learning disability, you may need support just for the subjects that give you the most trouble. Your school may have a special classroom with a teacher who is trained to help students overcome learning problems.

Some schools develop what is called an Individualized Education Program (or IEP), which helps define a person's learning strengths and weaknesses and make a plan for the learning activities that will help the student do his or her best in school. A student's IEP might include some regular time with a tutor or in a specialized classroom for a certain subject, or the use of some special equipment to help with learning, such as books on tape or laptop computers for students who have dyslexia.

Medication is often prescribed to help students with ADHD. There are several medicines on the market today to help improve a student's attention span and ability to focus and to help control impulses and other hyperactive behavior.

There's no cure for a learning disability. And you don't outgrow it. But it's never too late to get help. Most people with learning disabilities learn to adapt to their learning differences, and they learn strategies that help them accomplish their goals and dreams.

Reviewed by: D'Arcy Lyness, PhD  
Date reviewed: March 2004

## Matt's Story

What is dyslexia? That question is part of the problem of having dyslexia—many people don't even believe it exists. And those who do accept its existence think it is only reading backwards. Dyslexia is a number of things. In education, it is officially called specific language disability. For people who have not been diagnosed it is sometimes called laziness or lack of concentration. For me, it means a difference in the way my brain learns and recalls information, not only that sometimes letters and numbers get jumbled or that I have a hard time remembering if the symbol I'm looking at is a 7 or 9, a g or a j, or a lot other things you'd never believe.

For me, it started early. Kindergarten was good enough until we got to numbers and letters and, of course, remembering what they were. First grade was worse, and by second grade I was falling farther behind. That was first of many summers I would spend inside, or at clinic, working instead of playing. By third grade, I was identified as learning disabled and began to go to the Resource Room for part of the day.

I never really felt different from everyone else though sometimes I felt slow, dumb, humiliated, and very frustrated. I knew what I wanted to do, where I wanted to go, but I just couldn't get there. One of the biggest struggles was to understand that I was a little different and that was OK.

When you have a hidden disability you become a "con artist." You learn to think, you find ways to get around things. Now that by itself isn't so much of a con as a survival skill, but the way you do it and why you do it is important. For instance, one of the things that has always gotten to me is the labels they put on public restrooms, not just "Ladies" and "Men" but also "Lads" and "Lasses," "Dame" and "Herren," you name it. You have to develop the skill and the attitude to know that there is more than one way to learn something or enter a door and sometimes you just have to learn to wait a minute, look at the situation, and maybe see who's going and coming.

Luckily for me I've had some very special teachers, understanding, creative, skilled, and caring. This doesn't stop the nerves and panic whenever I start a new class with a new teacher. What will their expectations be? Will they understand my disability? Will they be willing to help me—giving me time I need, or understanding that sometimes I do things in a different way, or that no matter how hard I try sometimes I try I sometimes fail? It's pretty stressful until I get to know them and see how they react to my disability. But it has also taught me a lot of things I'll need to know later on in college. Some things, like "reading" a teacher, understanding their likes and dislikes and attitudes, are skills that my classmates are only starting to learn about. It's taught me how to communicate better, something I'm still working on, but it's very important for me to do.

It's very hard to keep a healthy mental attitude. If a person hasn't been identified it can lead to loss of self-esteem and eventually in many cases to jail. But even those of us who have been diagnosed have problems. This is a hidden disability and we have to deal not only with our own feelings but also with people who don't understand and resort to verbal abuse, or make things more difficult. One example I can think of was when I applied for my first job last year. Even though I'd had my mother help me complete the forms at home, the secretary still wasn't satisfied. When I asked her to slow down and explain a little more because I was dyslexic, she became very sarcastic and asked if I was able to at least sign my name. I got over that, but it makes me concerned about how things will be in the future. It's hard to be confident about my abilities.

Perhaps that is the most important thing for dyslexics to remember, to be confident. Confident that they are intelligent and capable of doing anything they want to do. They may have to do it differently, maybe get a little more help, work longer, and harder, but they can do it.

-Matt, Age 16, Ventura, CA

Source: Take A Walk In My Shoes—A Guide for Youth on Diversity Awareness Activities by Yuri Morita, June 1996, Office of Administrative Action, Division of Agriculture & National Resources, University of California.

School has been and still is something that I dread profusely. Going to school has been like climbing up a tremendous, rocky mountain with steep cliffs and jagged, slippery rocks. This mountain is very grey and always covered in dark, murky, cold clouds. I step forth to take on this task of climbing this huge mountain. Each step is a battle against strong, howling, icy winds. The winds contain frigid rain that slams against my body, trying to push me down. I keep battling my way up. Sometimes I am knocked down, and sometimes I have to stop to regain my strength. My body is numb. My hands shake like leaves in the wind as I claw myself up the mountainside. Not being able to open my eyes, I blindly claw myself up the steep cliff. I stop because I am in such great pain. I look up and see that my struggle has hardly begun. Sometimes I just do not want to go on any further.

--Matt, Grade 9, Boston , MA , October 2003

Source: LD Online KidZone Magazine, <http://www.ldonline.org>

## Writing Activity: The Mechanics of Composing

*Note: Students will need a mirror for this exercise.*

*Dysgraphia is a learning disability that makes it difficult to automatically remember the movements needed to write letters or numbers. It can interfere with communication of ideas through writing by causing poor handwriting, random punctuation, spelling errors, irregular letter sizes and shapes, letter and number reversals, disordered numbering, mixture of upper/lower case letters or print/cursive letters, unfinished words or letters, and slow copying and writing. People with dysgraphia are often misunderstood as lazy, careless, unmotivated, or “slow” when in fact they may not have control over the motor functions needed to write clearly. These individuals may experience high levels of frustration when they are unable to translate ideas that they can easily think and speak about on to the written page. As a result, teachers and others often have an incomplete understanding of what these individuals know. The following activity may help you to understand the frustration that a student with a writing disability feels.*

*Take out a pencil and a piece of paper.*

*Have a partner hold up a mirror.*

*Put the paper against your forehead.*

*Looking into the mirror, write the word good.*

*Look at the word. Did you write it correctly?*

*Try again.*

*Now pretend that the teacher is standing next to you. “Hurry up!,” she says. “Everyone else is finished!” Now matter how smart you are or how hard you are trying, you can’t do it right. Think of your brain as a giant computer. Like a machine, it sometimes has bad connections. A short circuit comes if the brain gets “overloaded.” It gets overloaded when too many messages come in at once from your eyes, ears, nose, and fingers. These messages get confused. You wish you had a fine tuning knob behind your ear to bring things back into focus. For learning disabled children, this “brain scramble” shows up in many ways. It shows in thinking, reading, writing and talking. You can imagine how frustrating it is to read, write, and talk with “brain scramble.” No wonder some learning disabled kids think that they are stupid or crazy.*

*Source: JOSH: A Boy With Dyslexia by Caroline Janover, iUniverse, Inc., 2004*

## Decoding Activity: Recognizing Phonemes

*Phonemes are the building blocks of language. Represented by letters of the alphabet, they are the component sounds of spoken words. Most people automatically hear, for example, that the word "goat" is made up of three sounds: "guh," "oh," and "tuh."*

*Reading requires the ability to map the phonemes we hear to letters on a page, and vice versa. But what happens when this basic skill, called decoding, doesn't come automatically? Imagine struggling to sound out every word because you can't distinguish among phonemes.*

*Take a few moments to familiarize yourself with this phoneme translation key. Then use it to read the passage that follows.*

*Phoneme translation key:*

*When you see: Pronounce as:*

q	d or t
z	m
p	b
b	p
ys	er
a, as in bat	e, as in pet
e, as in pet	a, as in bat

*Read the following passage aloud to yourself -- or to a roomful of your peers!*  
*We begin our qrib eq a faziliar blace, a poqy like yours enq zine. Iq conqains a hunqraq qrillion calls qheq work qogaqhys py qasign. Enq wiqhin each one of qhese zany calls, each one qheq hes QNA, Qhe QNA coqe is axecqly qhe saze, a zess-broquceq rasuze. So qhe coqe in each call is iqanqical, a razarkaple puq veliq claiiz. Qhis zeans qheq qhe calls are nearly alike, puq noq axecqly qhe saze. Qake, for insqence, qhe calls of qhe inqasqines; qheq qhey're viqal is cysqainly blain. Now qhink apouq qhe way you woulq qhink if qhose calls wyse qhe calls in your prain.*

*Here is the translation:*

*We begin our trip at a familiar place, a body like yours and mine. It contains a hundred trillion cells that work together by design. And within each one of these many cells, each one that has DNA, The DNA code is exactly the same, a mass-produced resume. So the code in each cell is identical, a remarkable but valid claim. This means that the cells are nearly alike, but not exactly the same. Take, for instance, the cells of the intestines; that*

*they're vital is certainly plain. Now think about the way you would think if those cells were the cells in your brain.*

*(Excerpt from "Journey into DNA" on the "Cracking the Code" Web site, NOVA Online.)*

*So how did you do? Assuming you found the exercise difficult (that was our intention), consider that we disguised only eight of the forty-four known phonemes in the English language. And imagine if this weren't a game.*

Source: *Misunderstood Minds* at <http://www.pbs.org/wgbh/misunderstoodminds>

## Sequence Activity: Multi step Problems

*Many students with math disabilities find complex, multistep math problems particularly difficult. Even children who did well in their early school years—easily learning basic arithmetic and math facts—may reach fourth grade and suddenly find math next to impossible.*

*Integration is an important part of school mathematics from the fourth grade on. The ability to perform multiple operations in the proper sequence (for instance, adding as well as multiplying in a long multiplication problem) or to hold on to one piece of information while remembering another is critical to a child's success in mathematics.*

*The problem set below is designed to evoke in you the intimidation and frustration a young student with a math disability might feel working out a problem that requires the integration of mathematics skills. Give yourself one minute to solve all three problems.*

*Follow all four instructions below to solve each of the three problems. Enter your answer into the space provided.*

- A. Multiply the third number in the first row by the seventh number in the third row.*
- B. Add this result to the fifth number in the second row.*
- C. Add to this total ten times the fourth number in the third row.*
- D. Subtract the eighth number in the first row from the result.*

Problem 1:           6 5 8 7 4 5 6 8 4           Answer: \_\_\_\_\_  
                          3 2 1 9 5 6 4 2 1  
                          6 5 1 5 1 3 2 3 5

Problem 2:           7 5 4 9 9 5 4 4 1           Answer: \_\_\_\_\_  
                          2 5 1 4 8 9 6 6 8  
                          5 7 5 7 5 7 6 8 2

Problem 3:           1 2 3 7 6 5 4 3 2           Answer: \_\_\_\_\_  
                          8 4 3 2 1 6 5 4 8  
                          6 5 5 8 1 7 5 12 6

*Did you find the quiz difficult? The thing is, none of the calculations were difficult by themselves. They are simple math facts. Together, though, and with a little time pressure added in, simple problems may become complex and overwhelming. Success in mathematics, particularly in later grades, also depends on language and writing skills, for instance interpreting word problems or mastering complex symbolism. Imagine adding these complexities to the problems above.*

*Answer Key: Problem 1: 63; Problem 2: 98; Problem 3: 93*

Source: *Misunderstood Minds* at <http://www.pbs.org/wgbh/misunderstoodminds>

## Who Am I?

1. Born one of nine siblings in 1951, this world-famous fashion designer reports that “I performed poorly at school...and was perceived as stupid because of my dyslexia. I still have trouble reading.” This person dreamed of working in fashion from a young age and opened his first clothing store, “The People’s Place,” in the 1970s. After the business went bankrupt, this person headed to New York City to concentrate on fashion design. Although he was a relative unknown (and short on money), this person turned down job offers from the famous designers Calvin Klein and Perry Ellis in order to pursue dreams of his own company , which today employs over 5,400 people and takes in almost \$2 billion each year.

Who am I? \_\_\_\_\_

2. This British businessman was educated at an exclusive School, but did not do well due to his nearsightedness and dyslexia. Despite these problems, he developed a national magazine and a student advisory service while he was still a teenager. After leaving school, this person started a mail-order music catalogue, which eventually led to the formation of Virgin Records, one of the largest music companies in the world. He went on to form Virgin Airlines, a mobile phone network, an internet company, and even a Cola. Known for his personal adventures, this person crossed the Atlantic in the first and largest hot air balloon to cross the ocean, and plans some day to circle the world in his hot air balloon.

Who am I? \_\_\_\_\_

3. This preeminent polar explorer was diagnosed with dyslexia in the seventh grade. Though her learning differences made school extremely frustrating, she never gave up on her dream. She is the first known woman in history to cross the ice to both the North and South Poles. She was inducted into the Women's Hall of Fame in 1995 and has received numerous other awards for her accomplishments.

Who am I? \_\_\_\_\_

4. Born in 1881 in Spain , this famous artist was both controversial and trend-setting. He attended local parochial schools, had difficulties with reading, and was labeled a dyslexic. Despite the difficulties that a learning disability posed in school, it became clear that he had an incredible talent. He had a unique sense of beauty and painted things as he saw them — out of order, backwards or upside down. His paintings—including Guernica and The Young Ladies of Avignon— demonstrated the power of imagination, emotion, and creativity.

Who am I? \_\_\_\_\_

5. This famous actor grew up poor and moved around a lot while his father looked for work. He suffered from dyslexia and was put into remedial classes at school. Though academic subjects were challenging, this person competed in many sports and appeared in a number of plays. After school he focused all his energy on developing an acting career, and never let his learning disability stand in the way of success. Today, he learns movie lines for films such as Mission: Impossible and Jerry Maguire by listening to a

tape.

Who am I? \_\_\_\_\_

6. Born in Italy in 1452, this famous painter and sculptor was also was an internationally renowned inventor, scientist, engineer, architect, musician, mathematician, astronomer, geologist, biologist, and philosopher in his time. He was also believed to suffer from a number of learning disabilities, including dyslexia and attention deficit disorder. It appears that this person wrote his notes backwards, from right to left, in a mirror image (a trait shared by many left-handed dyslexic people). This person overcame his learning disabilities by funneling his creative talents into visual depictions of his thoughts. The Mona Lisa is one of his most famous paintings.

Who am I? \_\_\_\_\_

7. This scientist and inventor was thrown out of school at age 12 because he was thought to be terrible at mathematics, unable to focus, and had difficulty with words and speech. It was very clear, however, that this person was an extremely intelligent student despite poor performance in school. He was an avid reader of the latest research of the day and frequently contributed articles about new ideas in telegraph design to technical journals. Over the course of his career, this person patented 1,093 inventions, including the phonograph and the motion picture camera.

Who am I? \_\_\_\_\_

8. This outstanding American entertainer had a lot of difficulty in school, but did not learn until she was an adult that she has dyslexia. Growing up, this person remembers being called dumb and stupid because she had a lot of problems reading. It was clear to her teachers and family that she was neither slow nor dumb, but had some problem that had not yet been well defined. Despite dyslexia, this person has had a successful film and television career, appearing in major motion picture hits like Ghost, Jumping Jack Flash, The ColorPurple, and Star Trek: Generations.

Who am I? \_\_\_\_\_

9. This well known children's book author did not start writing until the age of 41. Diagnosed as having Dyslexia, Dysnumeria and Dysgraphia at the age of 14, she did not learn to read well until high school, when a teacher got her the additional help needed to overcome her reading problems. This person went on to major in Fine Art and receive a Ph.D. in Art History. She has written a book, called Thank You, Mr. Falkner, about her experiences with learning differences and the teacher who helped her. Some of her other titles include Mrs. Katz and Tush, The Keeping Quilt, and Pink and Say.

Who am I? \_\_\_\_\_

# Learning Disabilities: Types, Symptoms, Diagnosis, and Causes



Approximately one in every seven people in the U.S. has a learning disability.

True learning disabilities are due to anomalies in brain structure or function, which can be inherited. Toxins in utero or in a person's early environment can also cause learning disabilities.

On this page: [What is a learning disability?](#) | [Types of learning disabilities](#) | [Symptoms or warning signs of learning disabilities](#) | [Developmental disability vs. learning disability](#) | [Is ADHD a learning disability?](#) | [Learning differences or learning disabilities?](#) | [Getting a diagnosis](#) | [What can be mistaken for a learning disability?](#) | [Sensory integration dysfunction](#) | [Causes of learning disabilities](#) | [Effects of learning disabilities](#) | [References and resources](#) | [Additional resources](#) | [Related Helpguide articles](#)

★[Bookmark](#) ✉[E-mail](#) 🖨️[Print](#)

Almost every day, you hear of a child or adult who has a learning disability. Learning disabilities can result in lowered self-esteem and an increased chance of dropping out of school, and sometimes depression or criminal behavior. The sooner you diagnose a learning disability and develop successful strategies, the better the chance of a fulfilling life.

However, sometimes you might misinterpret normal childhood behavior as a learning disability. It is important to distinguish between the two so that you can take appropriate action.

## LEARNING DISABILITIES

### Part I: Types, Symptoms, Diagnosis, and Causes

Part II: [Treatment, Help, and Coping Strategies](#)

## What is a learning disability?

A person with a learning disability has difficulty in collecting, organizing, or acting on verbal and nonverbal information. Most commonly, the person has trouble understanding or using written or spoken language. The difficulty is due to a neurological difference in brain structure or functioning.

### Children & Parenting

[Attachment & Bonding](#)

[Blended / Step Families](#)

[Childhood & Juvenile](#)

[Obesity](#)

[Learning Disabilities](#)

[Separation & Divorce](#)

[Grandparenting](#)

School is often the setting where a child's learning disability first becomes apparent. The disparity between the child's intelligence and the child's school performance highlights the learning difficulties. You will notice problems in one or more of these areas:

- language development and language skills (listening, speaking, reading, writing, and spelling)
- social studies
- mathematics
- social skills
- motor skills (fine motor skills, as well as coordination)
- cognitive development and memory
- attention and organization
- test-taking

People with learning disabilities do not have low intelligence; in fact, they have average or above average intelligence. However, their academic performance, as measured by standardized tests, is below what one would expect of someone of their intelligence, age, and grade level. Thus, a person with a learning disability may score poorly on tests, but the low scores are due to a problem with learning, not to low intelligence.

## What are the types of learning disabilities?

If you or your child is diagnosed with a learning disorder, you will be given the name of the specific learning disability. Following are the types of learning disabilities. Learning disabilities fall into two major types, plus another miscellaneous category.

- **Speech and language disorders** (the person is delayed by years in the development of one of these skills):
  - Difficulty **producing speech sounds** (developmental articulation disorder). The person might mispronounce certain letters or letter combinations.
  - Difficulty **using spoken language** to communicate (developmental expressive language disorder). The person has difficulty with verbal expression.
  - Difficulty **understanding what other people say** (developmental receptive language disorder). The person hears the words, but doesn't process the words correctly.
- **Academic skills disorders** (the person is delayed by years in the development of one of these skills):
  - **Reading** problems (developmental reading disorder, or **dyslexia**). The person cannot identify different word sounds.
  - **Writing** problems (developmental writing disorder, or **dysgraphia**). The person has problems with handwriting or with creating sentences that make sense to others.
  - **Arithmetic** skills problems (developmental arithmetic disorder, or **dyscalculia**). The person has problems with calculations or with abstract mathematical concepts.
- Miscellaneous learning disabilities
  - **Fine motor skills** problems (**dyspraxia**)

- **Nonverbal Learning Disorder**
- Others

## What are the symptoms of a learning disability?

Every child has problems at one time or another in school. And these problems can cause a cycle of failure because the child may not get the help needed, and self-esteem deteriorates. But there is a difference between a struggle with a particular subject or teacher, and a certified learning disability.

All of the following are necessary symptoms of an official learning disability:

- average or above average intelligence (as measured by the IQ score)
- significant delay in academic achievement
- severe information processing deficits
- uneven pattern of cognitive development throughout life
- a disparity between measured intellectual potential (IQ score) and actual academic achievement
- the learning disability persists despite instruction in standard classroom situations

If your child has ongoing struggles in school with reading, writing, or math, a learning disability may be the cause. Refer to [references and resources](#) below for the age-specific warning signs of learning disabilities in preschool-aged children, in elementary- and secondary-school children, and in adults. Seek a professional diagnosis if you suspect a learning disability.

## What is the difference between a learning disability, a developmental delay, and a developmental disability?

Generally speaking, someone is **learning disabled** if there is a large discrepancy between intellectual ability and achievement. The person with a learning disability may have low or high intelligence; the person simply learns below intellectual capability because of a processing disorder.

A **developmentally delayed** child is one who is younger than five years old and who is behind schedule in attaining developmental milestones. A developmentally delayed child usually reaches the developmental milestones eventually.

The **developmentally disabled** child has a severe and chronic physical or mental impairment that limits success in several major life areas, and this impairment begins in childhood. Developmental disabilities include mental retardation, cerebral palsy, epilepsy, and autism. Low IQ is the largest characteristic of someone with mental retardation. However, most of the other developmental disabilities do not include lowered intellectual functioning.

Learning disabilities are developmental disabilities. People with learning disabilities have a chronic mental impairment. However, they are not mentally retarded; instead, they have average to above-average intelligence. They simply cannot learn in certain processing modes, and they must compensate for this disability.

## Is ADHD a learning disability?

This question is an important, but confusing, one because many individuals with ADHD also have one or more learning disabilities, and individuals with learning disabilities sometimes also have ADHD. Each condition has a separate diagnosis and treatment.

## Brief Comparison of learning disabilities and ADHD/ADD

	ADHD/ADD	Learning Disabilities
Diagnosis	<ul style="list-style-type: none"><li>defined by symptoms of distraction/inattention and or hyperactivity</li></ul>	<ul style="list-style-type: none"><li>intelligence, academic and processing tests to determine disparities between ability and performance</li></ul>
Presumed cause	insufficient metabolism of particular brain chemicals	different circuitry in the brain
Treatment	<ul style="list-style-type: none"><li>may include medication as well as other interventions</li><li>once attentive, a person with ADHD and able to learn as others do</li></ul>	<ul style="list-style-type: none"><li>medication cannot change brain wiring</li><li>needs special education, customized to the individual's learning differences</li></ul>

What is not clear and remains unanswered is the relationship between brain circuitry and brain chemistry. See [related Helpguide articles](#) for more discussion on ADHD.

## Why do people sometimes call them learning *differences* instead of learning *disabilities*?

Think about how you learn new things. What way do you learn best; what is your learning style?

- Are you an **auditory** learner, someone who learns best by listening and talking?
- Are you a **kinesthetic** learner, who learns best by actively exploring your environment?
- Or are you a **visual** learner, who learns best by watching and then by visualizing what you have learned?

Auditory, kinesthetic, visual: these are all considered different ways of learning that are within the norm. Learning specialists also talk about **multiple intelligences**, or how different people have strengths in different kinds of thinking.

When does a different way of learning and thinking become a difficulty with learning, or a disability? The point at which a different way of learning is considered a disability is when the person has difficulty in learning in settings where other people are learning with much more ease. It has been suggested that learning preferences may be cultural. Typically, learning differences have the biggest effect in school settings.

Dr. Mel Levine of the All Kinds of Minds Institute says that many children have **brains that are wired differently**. People with learning differences have a neurobiological difference: their brains are different in structure or functioning, and so they learn differently. The problem is that standard schooling tends to assume that one kind of teaching will work for all kinds of students. Instead of labeling these children as learning *disabled*, Levine calls them children with **learning differences**.

In the best of all worlds, Levine would like educators to discover how each child learns best and what the individual's strengths are, in order to develop a customized educational strategy for each child. Every child can be successful in learning and in life, if someone just discovers and teaches to those strengths.

A learning disability may be a problem with the individual or a problem with standardization in schools or both.

## How can I get a diagnosis for a possible learning disability?

To find out if you or your child has a learning disability, ask your family doctor, friends, relatives, or school personnel for a referral to someone who can do testing and make a diagnosis. The specialist who can help you can be a:

- clinical psychologist
- school psychologist
- educational psychologist
- neuropsychologist
- psychometrist
- occupational therapist (tests sensory disorders that can lead to learning problems)
- speech and language therapist

The specialist will assess you or your child's strengths and weaknesses by administering tests. Some of the tests are written tests, and some are oral questions. In addition, the specialist will interview you about the history and details of the problems you are encountering.

Early diagnosis of learning disabilities is very important. **The earlier you catch the problem, the more available it is for correction.** Some types of learning disabilities, if caught early, have very good prognoses. Intervention can even change the way the brain works.

## What else can look like a learning disability?

Confusion exists between cause and effect. Many problems can contribute to poor learning. Sometimes a child having difficulties in school may have something other than a learning disability that is interfering with learning and academic performance. Other conditions that could cause *learning difficulties* are:

- ADHD
- sensory integration dysfunction (DSI, or SI) (see below)
- hearing deficits
- vision problems
- attachment disruption
- emotional trauma
- anxiety
- depression
- a home environment that is not conducive to learning
- a mismatch between a child's personal learning style and the expectations of the child's parents and/or teachers

Sometimes input from several specialists is needed to get an accurate diagnosis. The specialist who tests for learning disabilities may not be knowledgeable about all the conditions listed above that may contribute to learning difficulties. If this is the case, an accurate diagnosis from a single specialist may be incomplete.

In school, your child may appear to have low intelligence, but the problem may be a learning disability, any of the problems above, or a combination of conditions. Be an advocate for your child and find out the source of the learning difficulty.

## How is sensory integration dysfunction (DSI or SI) related to learning disabilities?

**Sensory integration dysfunction (DSI or SI)** can look like a learning disability, but it isn't. DSI is a neurologically based disorder, like ADHD and learning disabilities. A child with DSI has an inability to organize sensory input for use in daily living, which includes school, play, and family life. The child has either a hyposensitivity or a hypersensitivity to sensory input, such as an overreaction to the feel of clothing or to the texture of food. DSI is similar to ADHD in that it impacts learning, but is not a learning disability. DSI overlaps with ADHD in symptoms of inattention and restlessness.

Treatment includes occupational therapy, talk therapy, and an individualized "sensory diet," which reduces some sensory input in the environment and gets the child used to other sensations. Unlike ADHD, medications do not help DSI. Mostly the treatment occurs outside of school.

ADHD or DSI may also be present and contribute to a child's inability to learn, so get a comprehensive evaluation before embarking on a treatment and educational plan. DSI or ADHD can make your child **not available for learning**.

**Nonverbal Learning Disorder (NVLD)** is a type of learning disability where the child has deficiencies in nonverbal reasoning. NVLD overlaps with both ADHD and DSI: the child with NVLD can have the sensory sensitivity of a child with DSI and the impulsiveness, disorganization, and hyperactivity of a child with ADHD or with DSI. Careful diagnosis can sort out the mix of problems and provide a treatment plan.

## What causes a learning disability?

**Abnormal brain structure or function** causes learning disabilities. However, *poor performance in school* can be due to other factors. For example:

- If no one at home talks to a child and helps the child to learn how to interact with the world, the child will be delayed in social or intellectual development.
- If parents or teachers have a personal style at odds with the child's style (such as a highly structured, visually organized adult and an energetic, kinesthetic child who learns by doing, not by seeing), the mismatch may appear to be a learning disability in the child.

Different learning disabilities have unique neurological footprints. Ongoing research on the brains of people with learning disabilities tells us more each year about which areas of the brain are involved in learning and learning disorders.

What brings about the different brain structure or function? These neurological abnormalities in the brain can result from:

- genetics
- factors before birth or during delivery

- factors in early childhood
- brain trauma or tumors

### **Genetics**

A person can inherit abnormal brain structure or function. Although a person may have inherited a learning disability, the environment can still make a difference. For instance, a child with a learning disability who is raised in a good learning environment will have a better outcome than a child raised in a poor learning environment.

### **Factors before birth or during delivery**

The uterine environment is very important for healthy brain development in the fetus. Negative influences on brain development *in utero* and at birth are:

- the mother's drug-use, alcohol-use, or smoking during pregnancy
- physical problems during pregnancy or delivery (e.g., German measles, oxygen deprivation)
- very low birth weight
- premature birth
- birth trauma or distress
- the mother's poor nutrition

### **Factors in early childhood**

Several factors in early childhood can contribute to delayed brain development:

- neonatal seizures
- a poor learning environment due to a parent's own learning disability
- developmental trauma ( such as abuse, isolation or neglect in infancy)
- toxins in the environment (such as cadmium, lead, or mercury)
- chemotherapy treatment for childhood cancer
- central nervous system infections
- chronic illnesses such as diabetes or asthma
- poor nutrition

### **Brain trauma or tumors**

Physical damage to the brain can bring about learning disabilities.

It is impossible to know exactly what caused *your* child's learning disability. The best viewpoint to take is one that doesn't look back at what might have caused the problem, but one that looks forward to how you can help your child.

## **How does a learning disability affect an individual and the other people who live or work with the person?**

A learning disability affects a person in all facets of life: school, work, free time, and personal relationships. Both the person with the learning disability and other people around the individual must adjust to the challenges that the learning disability presents.

### **The individual at school**

**Low self-esteem** is the most devastating result of learning disabilities for the individual student in school. The student with learning disabilities often feels like a failure in school when compared to other students in some skill areas. Peers may ridicule the student with learning disabilities. And teachers may misunderstand the reason for the student's poor performance and tell the student to try harder.

### **Teachers**

Teachers may feel extremely **frustrated** and inadequate when they cannot help a student with undiagnosed learning disabilities; the teacher may not understand why the student is not performing well. Some teachers blame the student for not trying hard enough. Other teachers blame themselves for not knowing how to reach the student.

### **Other students in school**

When a teacher spends a disproportionate amount of time with students who have learning disabilities, other students do not get enough help. These students can feel **resentful**, or their parents may notice what is going on in the classroom and complain.

### **The individual, supervisors, and colleagues in the workplace**

In the workplace, a person with learning disabilities suffers from the same low self-esteem and misinterpretation by others as does the student in school. Supervisors can feel **stressed**, and peers may be **resentful**.

### **Families**

Families suffer from focusing on a child with learning disabilities. Siblings may be **resentful or jealous** of the attention given to the child with the learning disability. And parents may be **exhausted** by the problem-solving required to help the child with learning disabilities.

### **Social problems**

In addition, the learning-disabled individual may have social problems in the workplace, school, and home that result from poor self-esteem or from an **inability to read social cues**.

### **Low self-esteem**

Low self-esteem is a major result of repeated learning failures in school, at home, or in the workplace, and from humiliation by teachers, peers, parents, or others. Low self-esteem thus becomes a secondary symptom to the learning disability, and both symptoms must be treated.

For more information, see **Part II: [Treatment, Help, and Coping Strategies](#)**.

## **References and resources for diagnosis and causes of learning disabilities**

### **Different learning and thinking styles**

[Learning Styles Explained](#) – Describes the three learning styles and provides a discussion of multiple intelligences (seven types of intellectual ability). Helpful for getting to know yourself and your special learning abilities. Written for people with learning disabilities/differences. (LD Pride)

[The Four Learning Styles in the DVC Survey](#) – Includes learning strategies for each type of learner: visual/verbal; visual/nonverbal; tactile/kinesthetic; and auditory/verbal. Also see [A Learning Style Survey for College](#) – Once answered, this questionnaire tells you which type of learner you are and offers suggestions on how best to study or learn something new. (Catherine Jester, Learning Disability Specialist, with Suzanne Miller; Diablo Valley College, Pleasant Hill, California)

### **Warning signs and diagnosis of learning disabilities**

[Assessment](#) – An assortment of articles on the learning disability assessment process. Many topics help with preparing for the development of an Individualized Education Program. (SchwabLearning.org)

[Diagnosing and Treating Learning Disabilities](#) – Discusses warning signs of learning disabilities in preschool children (younger than Kindergarten age). (American Academy of Pediatrics)

[The Warning Signs of Learning Disabilities](#) – Describes symptoms, categorized by functional areas affected by the learning disabilities. (Learning Disabilities Worldwide)

[What Are Some Common Signs of Learning Disabilities?](#) – Discusses warning signs of learning disabilities, from preschool age through adults (includes an audio version). (LD OnLine)

[Do I Have LD?](#) – Discusses warning signs of learning disabilities in adults. (National Center for Learning Disabilities)

[Learning Disabilities](#) – Describes the symptoms of learning disabilities in adult students, plus strategies for teaching students with learning disabilities. (Cuesta College Disabled Student Programs and Services, San Luis Obispo County, California)

[This site offers screening tests](#) (commercial site) – PEDS Child Development Screening Test. Helps you to determine whether your child has developmental, learning, or behavioral problems. For children up to age eight. Can indicate a possible problem, but does not diagnose which problem. Helps you to recognize a problem early and to seek a professional diagnosis soon enough to improve the school experience. (Forepath)

[What is ADHD? Is it a type of LD?](#) – Discusses how ADHD and learning disabilities are different. (Larry B. Silver, LD OnLine)

[Childhood Learning Disabilities](#) – An easy-to-read article on types of learning disabilities, diagnosis, causes, treatment, coping, and educational accommodations. (Learning-Disabilities.org)

[Is It a Learning Disability or Something Else?](#) – Describes what to do if your child is having trouble in school, but doesn't seem to have a learning disability. (Jan Baumel, SchwabLearning.org)

[Understanding Sensory Integration](#) – Provides an overview about sensory integration dysfunction (DSI). This is not a learning disability, but can interfere with being available to learn. (Marie E. DiMatties, LD OnLine)

### **Details on particular types of learning disabilities**

[Dr. Gordon Sherman Offers His Vision of Dyslexia](#) – Discusses the brain differences in people with dyslexia, and ways that the educational system can help children with this reading disorder. Early intervention is especially important. (SchwabLearning.org)

[Speech & Language](#) – Provides a set of articles on speech and language disorders and how they affect learning. (LD OnLine)

[Processing Deficits](#) – Offers a collection of articles on visual and auditory deficits, and how they affect learning. (LD OnLine)

[Dyscalculia: Learning Disabilities in Mathematics](#) – Discusses symptoms, diagnosis, effects, and treatment for dyscalculia. (National Center for Learning Disabilities)

[Dysgraphia](#) – Provides a description of the writing problems that are characteristic of dysgraphia, with a wealth of solutions and workarounds. (West Virginia University)

[Writing](#) – Offers a collection of articles describing dysgraphia and many ways to help a child who has problems with writing. (LD OnLine)

[NLDline](#) – A self-help site for people with Nonverbal Learning Disorder. See especially *Articles on NLD*. (Nonverbal Learning Disorders Line)

### **For adults with learning disabilities**

[For Adults](#) – Discusses diagnosis; the laws about protections and accommodations; college; the workplace. (Learning Disabilities Association of America)

### **For parents**

[Frequently Used Educational Terms](#) – Provides a list of definitions of terms you might encounter in your discussions about your child's learning disabilities. (SchwabLearning.org)

[For Parents](#) – Provides a vast collection of articles for parents who want advice on dealing with a child who has learning disabilities. Includes an in-depth description of the assessment process, and strategies to help your child. (Learning Disabilities Association of America)

### **For kids and teenagers**

[Learning Disabilities](#) – Contains essential information in an approachable style written for children. (Nemours Foundation)

[Understanding Dyslexia](#) – Written for teens, this article provides up-to-date information on what it's like to have dyslexia, how it is diagnosed, and what you can do. (Nemours Foundation)

### **The neurobiological basis of learning disorders**

[Neurobiological Basis of Learning Disabilities: An Overview](#) – Summarizes research on the brain biology of people with learning disabilities. (Christina Fiedorowicz, Learning Disabilities Association of Canada)

## **Additional online resources for diagnosis and causes of learning disabilities**

Note: The following articles are longer and more technical, but can help you to delve deeper into the subject.

[Finding Help](#) – Provides a list of agencies, organizations, and resources to help you in dealing with learning disabilities. (LD OnLine)

[Nonverbal Learning Disorders](#) – Describes a type of learning disability that is sometimes overlooked and untreated. The individual has inappropriate conduct, yet the disorder has a neurological basis, rather than an emotional basis. Describes how to identify Nonverbal Learning Disorder, as well as how to treat and cope with the disorder. (Sue Thompson, LD OnLine)

#### **Other resources we used in writing this article**

[Learning Disabilities](#) (National Institute of Mental Health)

[LD OnLine](#)

[SchwabLearning.org](#)

[All Kinds of Minds](#) (Dr. Mel Levine and Charles R. Schwab)

[Learning Disability - definitions, origins, history](#) (Mexico Child Link, UK)

[Medline Plus: Learning Disorders](#) (National Library of Medicine / National Institutes of Health)

[Learning disabilities research encompasses education and biology](#) (University of Washington Learning Disabilities Center)

[Learning Styles](#) (Deanna Bickta, Reading Specialist, Limerick Elementary School)

## **Related Helpguide articles**

- [Learning Disabilities: Treatment, Help, and Coping Strategies](#)
- [Signs and Symptoms of ADD or ADHD](#)
- [Causes of ADHD or ADD](#)
- [ADD / ADHD Diagnosis: Understanding the Process and the Difficulties](#)
- [Parenting a Child with ADD / ADHD: Strategies for Family and Home](#)
- [Teaching a Child with ADD / ADHD: Tips for Parents and Teachers](#)
- [Adult ADD / ADHD: Strategies to Manage Well at Home and at Work](#)
- [Parenting: Attachment, Bonding and Reactive Attachment Disorder](#)
- [Emotional and Psychological Trauma: Causes, Symptoms, Effects, and Treatment](#)
- [Anxiety Attacks and Disorders: Symptoms, Causes, and Treatment](#)
- [Depression: Signs, Symptoms, Causes, and Treatment Strategies](#)

Tina de Benedictis, Ph.D. created this article with contributions from Jaelline Jaffe, Ph.D., and Jeanne Segal, Ph.D. Last modified on: 10/31/05.

[http://www.helpguide.org/mental/learning\\_disabilities.htm](http://www.helpguide.org/mental/learning_disabilities.htm)