

Classroom Recommendations for Students with Visual Issues

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Goals:

1. Learn how visual conditions affect classroom performance.
2. Incorporate inexpensive and successful modifications to help your students succeed.
3. Discuss specific accommodations for standardized and computer-based testing.

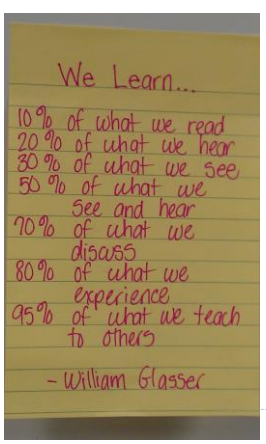
Course Notes:

- This course does not cover testing, diagnosis, or treatment, only classroom accommodations and modifications. I have no financial interest into any of the products (colored filters/reading glasses/line guides) etc. that will be discussed.

Vision at School

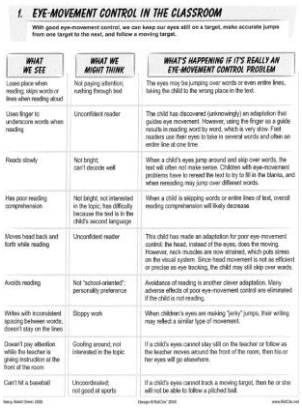
5-10% of school-aged children have an eye teaming or eye-focusing problem. They will pass a school screening.

Can you name the students in your classroom?



How Visual Conditions affect Classroom Performance:

- Visual Acquisition Skills
  - Focusing (visual clarity)
  - Following (tracking)
  - Fusion (eye alignment)
- Visual Perceptual Skills
  - Visual information processing: making sense of what we see.



1. EYE-MOVEMENT CONTROL IN THE CLASSROOM

With good eye-movement control, we can keep our eyes still on a target, make accurate jumps from one target to the next, and follow a moving target.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY AN EYE-MOVEMENT CONTROL PROBLEM
Loses place when reading; skips words or lines when reading aloud	Not paying attention; rushing through text	The eyes may be jumping over words or even entire lines, taking the child to the wrong place in the text.
Uses finger to underscore words when reading	Unconfident reader	The child has discovered (unknowingly) an adaptation that guides eye movement. However, using the finger as a guide results in reading word by word, which is very slow. Fast readers use their eyes to take in several words and often an entire line at one time.
Reads slowly	Not bright; can't decode well	When a child's eyes jump around and skip over words, the text will often not make sense. Children with eye-movement problems have to reread the text to try to fill in the blanks, and when rereading, may jump over different words.
Has poor reading comprehension	Not bright; not interested in the topic; has difficulty because the text is in the child's second language	When a child is skipping words or entire lines of text, overall reading comprehension will likely decrease.
Moves head back and forth while reading	Unconfident reader	This child has made an adaptation for poor eye-movement control: the head, instead of the eyes, does the moving. However, neck muscles are now strained, which puts stress on the visual system. Since head movement is not as efficient or precise as eye tracking, the child may still skip over words.
Avoids reading	Not "school-oriented"; personality preference	Avoidance of reading is another clever adaptation. Many adverse effects of poor eye-movement control are eliminated if the child is not reading.
Writes with inconsistent spacing between words; doesn't stay on the lines	Sloppy work	When children's eyes are making "jerky" jumps, their writing may reflect a similar type of movement.
Doesn't pay attention while the teacher is giving instruction at the front of the room	Goofing around; not interested in the topic	If a child's eyes cannot stay still on the teacher or follow as the teacher moves around the front of the room, then his or her eyes will go elsewhere.
Can't hit a baseball	Uncoordinated; not good at sports	If a child's eyes cannot track a moving target, then he or she will not be able to follow a pitched ball.

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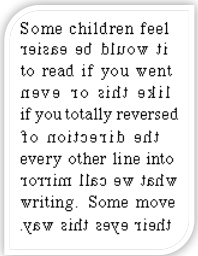
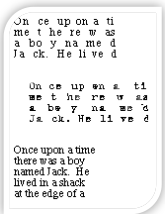
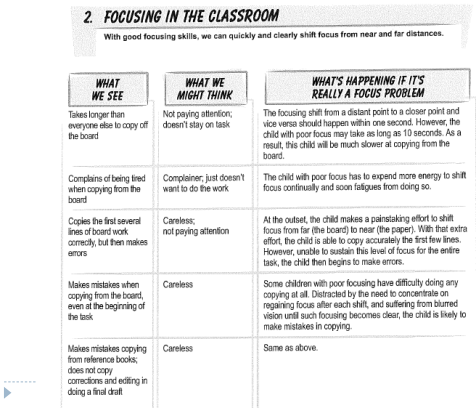
http://www.bouldervt.com/additional-resources--vision-and-learning



Types of Eye Movements:

- Fixation – maintaining a steady gaze
- Pursuit – following a moving target
- Saccade – and accurate jump from one place to another, used when reading.
  - Return Sweep – the diagonal movement from the end of one line (down and to the left) to the start of the next line of print.
  - *Reading through a straw

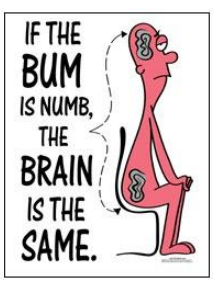




2. FOCUSING IN THE CLASSROOM

With good focusing skills, we can quickly and clearly shift focus from near and far distances.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A FOCUS PROBLEM
Takes longer than everyone else to copy off the board	Not paying attention; doesn't stay on task	The focusing shift from a distant point to a closer point and vice versa should happen within one second. However, the child with poor focus may take as long as 10 seconds. As a result, this child will be much slower at copying from the board.
Complains of being tired when copying from the board	Complainer; just doesn't want to do the work	The child with poor focus has to expend more energy to shift focus continually and soon fatigues from doing so.
Copies the first several lines of board work correctly, but then makes errors	Careless; not paying attention	At the outset, the child makes a painstaking effort to shift focus from far (the board) to near (the paper). With that extra effort, the child is able to copy accurately the first few lines. However, unable to sustain this level of focus for the entire task, the child then begins to make errors.
Makes mistakes when copying from the board, even at the beginning of the task	Careless	Some children with poor focusing have difficulty doing any copying at all. Distracted by the need to concentrate on regaining focus after each shift, and suffering from blurred vision until such focusing becomes clear, the child is likely to make mistakes in copying.
Makes mistakes copying from reference books; does not copy corrections and editing in doing a final draft	Careless	Same as above.



Accommodation (i.e. Focusing) –

Can you pay attention (focus) unless your vision is clear (focus)??

*Focusing lens demonstration

* "cheaters" – reading glasses in the classroom or at the computer – not cheating! Helping!

12. EYE TEAMING IN THE CLASSROOM

With good eye teaming, the two eyes align together to see one object.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY AN EYE-TEAMING PROBLEM
Rests head on arm while writing; turns paper to extreme angle when writing; sits in awkward position while reading or writing	Tired; personal preference	When the two eyes do not align correctly, the child may unknowingly discover an adaptation that eliminates blurry or double vision. In certain body positions, only one eye is doing the seeing, so the alignment problem disappears. However, although the blurring and double vision are gone, research shows that use of one eye will reduce the child's visual pathways to the brain from 80% to just 20%.
Covers one eye when reading or writing	Goofing around	By covering one eye, this child may achieve the same effect as those who adopt awkward positions to suppress one eye.
Buries head in a book when reading	Likes the book	If the eyes overconverge when trying to align, then the child will see things smaller than they actually are. The only way for this child to make the text larger (and readable) is to bring the page closer to the eyes.
Complains of being tired after reading or writing for a short time	Whining personality; doesn't get enough sleep	If the eyes have the tendency to turn outward when trying to align, then the child has to expend extra energy and effort to realign the eyes with every eye movement, and thus quickly tires.
Has poor reading comprehension	Needs more practice reading and answering questions	When text blurs, a child's eyes may see the ending letter of one word shift into the next word. Likewise, when the eyes go out of alignment, the child may miss three to five words while the eyes are trying to realign. All these obstacles make reading comprehension a challenge.
Doesn't stay focused when reading or writing	Attention deficit problems	Often, a change of focus is a "quick fix" for an eye-teaming problem. If the child looks out the window, the text may not shift or be blurry when reading is resumed.
Avoids reading or writing	Personality preference	This avoidance is actually an adaptation. A child who isn't reading or writing has found a way to eliminate the problem of blurry or double vision.
Has poor handwriting; uneven spacing	Rushes through work	Poor handwriting may be the outcome of a child's distorted visual input.

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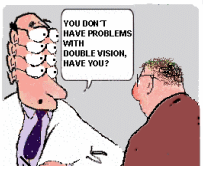
Common Vision Problems:

1. Binocular Vision Disorders
   - Convergence Insufficiency
   - Convergence Excess
   - Divergence Insufficiency
   - Divergence Excess
2. Strabismus
   - Esotropia
   - Exotropia
   - Hypertropia
3. Deficient Stereopsis
   - Suppression



Poor binocular control can result in words moving about on the page, or in double vision. Often the brain will alternate suppression of each eye in order to compensate.

Reading text that is double can be very confusing! The letters overlap, words run together, and sometimes the words appear to swim on the page. No one should have to suffer with double vision!

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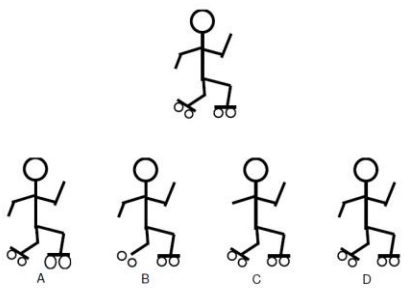
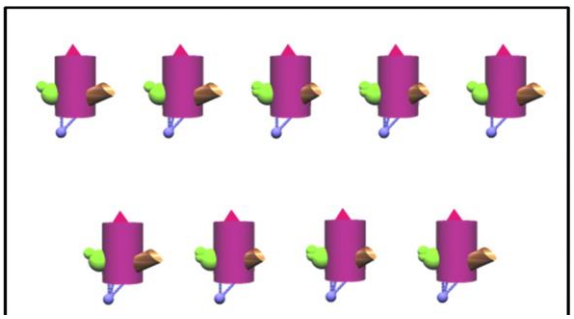
3. VISUAL DISCRIMINATION IN THE CLASSROOM

With good visual discrimination skills we see details, and we can quickly recognize both similarities and slight differences among objects, words, and forms.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A VISUAL DISCRIMINATION PROBLEM
Confuses similar letters	Not bright; not paying attention	If a child's eyes have not learned to distinguish differences among similar pictures, letters, or words, then minor variations will not stand out.
Does not correct misspelled words in written work	Rushes through work; just a "bad" speller	A child who cannot recognize differences between similar words may believe that everything is spelled correctly—even though the work still has errors.
Spells words correctly in original writing and orally, but does poorly in spelling sections of standardized tests	Rushed through the test; didn't "care" about test	Standardized tests often require that a child select the correctly spelled word from a choice of four similar words. So, even knowing how to spell a word correctly, the child with visual discrimination problems may not quickly recognize or ever note the correct spelling among a set of similar words.
Has poor reading comprehension	Needs more decoding or vocabulary lessons; needs more reading comprehension lessons	If a child is mistaking similar words for those actually appearing in the text, then content of the material will be different for that reader. For example, a child might read "Where is the plant?" when the text says "Where is the plane?" Such changes, especially if they are numerous, will affect the child's overall comprehension of the material.
Cannot compare and contrast similar concepts in essay form (e.g., "Compare the Spanish and English explorers. How were they the same? How were they different?")	Not bright, didn't study the literal information needed for such an analysis	A child who cannot distinguish differences in simple vision tasks (such as the difference between ***big*** and ***bag***) may lack the mental framework for making distinctions between two similar abstract concepts.





4. FORM PERCEPTION AND REPRODUCTION IN THE CLASSROOM

With good form-perception and reproduction skills, we see reference points that distinguish letters and forms from each other.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A FORM-PERCEPTION AND REPRODUCTION PROBLEM
Has difficulty recognizing shapes	Not very bright; not paying attention	The child with form-perception problems does not see a reference point when looking at shapes. Without this reference point, the child has nothing to call on to see the difference between, for example, an oval and a circle.
Does not write letters correctly	Sloppy; rushes when writing	For a child who has difficulty perceiving and producing simple geometric forms, seeing and producing our twenty-six letters—with all their variations in lines, curves, and angles—is even more difficult.
Fails to recognize the same word in the next sentence or page	Needs to pay more attention; goofing around	A child who does not truly "see" the form the first time cannot be expected to recognize that form consistently whenever it appears.
Has difficulty with higher-level thinking tasks	Not very bright	The child with form-perception problems has difficulty seeing how the parts create a whole in basic vision tasks. For example, where there are two intersecting lines, the child may see instead two separate angles joined at the middle. If children are unable to see part-whole relationships in simple visual tasks, then they will not be able to analyze more abstract part-whole relationships (e.g., solving a math word problem) in the content curriculum.
Cannot produce drawings (even with guided art lessons) that reflect the level of the rest of the class	Not skilled in art	The child with form-perception problems will not be able to produce what he or she cannot initially see.

Difficulty with Fonts and Italics:

The letter G

Colin Wheildon, author *of Type & Layout: Are You Communicating or Just Making Pretty Shapes?,* says:

"It's possible to blow away three-quarters of our readers simply by choosing the wrong type."

The difference between 'serif' and 'sans serif' fonts

Serif fonts have little feet and embellishments on the tip and base of each letter, making them more distinct and recognizable. Popular serif fonts are Times New Roman, Palatino, Georgia, Courier, Bookman and Garamond.

This is an example of Georgia font

It's been said that serif fonts are for "readability," while sans-serif fonts are for "legibility." Which is why, in print, sans-serif fonts are often used as the headline font and serif fonts are used for the body text.
Some popular San Serif fonts are Helvetica, Arial, Calibri, Century Gothic and Verdana.

This is an example of Century Gothic

Written text Survey results:

66 percent were able to comprehend Garamond

31.5 percent Times New Roman

12.5 percent Helvetica

(out of a total of 1,010,000 people surveyed).

For easiest reading on a computer, use Arial 12-point size and larger.

If you're going smaller than 12 points, Verdana at 10 points is your best choice.

If you're **after a formal look, use the font "Georgia."**

And for older readers, use at least a 14-point font.

http://www.awaionline.com/2011/10/the-best-fonts-to-use-in-print-online-and-email/

5. VISUAL FIGURE-GROUND PERCEPTION IN THE CLASSROOM

With good visual figure-ground perception, we can see information in the foreground regardless of the presence of background stimuli.

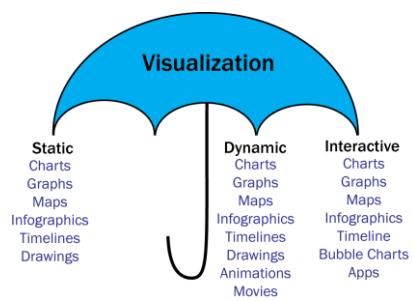
WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A VISUAL FIGURE-GROUND PERCEPTION PROBLEM
Can't find something in the desk (or takes too long to do so)	Disorganized; playing around	A child with poor visual figure-ground perception will have difficulty spotting what is important among a group of many items.
Doesn't complete math problems on a sheet (but knows the answers when asked orally)	Doesn't like math; isn't paying attention when doing seatwork; is wasting time	A child with poor visual figure-ground perception may become easily distracted when there are numerous problems on a page.
Doesn't follow whatever the teacher is presenting on the board	Needs to pay more attention during class	Surrounding stimuli (usually on or around the board) will make it difficult for a child with poor visual figure-ground perception to concentrate on the one spot where the teacher has recorded key information.
Doesn't know what the homework assignment is or forgets to bring in the homework (even when completed)	Disorganized; irresponsible; doesn't care about schoolwork	When the assignment is written on the board amid other writing and displays on a nearby wall, children with visual figure-ground problems will find it difficult to concentrate on getting it copied down. If the assignment is on a sheet that has been placed inside desks or student mailboxes, children may have difficulty locating it quickly when the bell rings. At home, these children may not "see" the homework among the many items in their rooms, and will therefore be less likely to get the work into their backpacks.
Easily distracted; unable to maintain focus during direct instruction	Attention deficit problems; immature	The inability to distinguish what is important from what is not makes it difficult for children with visual figure-ground problems to focus on whatever is being discussed, read, or demonstrated.
Can't locate information in a book	Needs to learn better research skills	A child with poor visual figure-ground perception will have trouble "zeroing in" on information in reference books.
Has poor reading comprehension	Needs more practice reading text and answering questions	A child with poor visual figure-ground perception may not be able to distinguish the main idea from the supporting details in a reading passage, and thus may have trouble answering comprehension questions that call on higher-level thinking skills.

6. VISUAL IMAGERY IN THE CLASSROOM

With good visual imagery skills, we can see clear images in our mind's eye.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A VISUAL IMAGERY PROBLEM
Misspells even basic words	Not bright; careless; hasn't been studying	Children with poor visual imagery skills make spelling mistakes because they do not "see" words in their mind's eye. Instead, they write words as they hear them: *liseen* for *listen*; *ber* for *been*. Since only half the words in the English language are spelled phonetically, even a good knowledge of phonics will not turn these children into good spellers.
Can't remember math computation number facts	Not bright; careless; hasn't been studying	The child with poor visual imagery skills does not "see" flash cards when recalling number facts; once the card is out of sight, so is the answer. Additionally, the child does not "see" patterns among the number facts that would help with recall (e.g., 5 x 7 is the same as 7 x 5, and 9 x 9 is 9 less than 9 x 10).
Studies longer than most and still doesn't do well on the social studies or science test	Not bright; not interested in that area of the content curriculum	The child with poor visual imagery skills has not learned to simultaneously visualize while reading, and so has no mental "pictures" for reference when trying to remember information during a test. Instead, the child relies on short-term memory, which often fails under stress.
Has difficulty answering comprehension questions that require critical thinking	Not bright	A child must have efficient recall of literal information in order to synthesize, analyze, evaluate, and apply that information. The child with poor visual imagery skills has difficulty creating that literal base, and so has nothing to draw on when asked to think critically.
Cannot follow multistep directions	Not paying attention	The child with poor visual imagery skills has not learned to simultaneously visualize while listening to directions, and so has no mental images to help with recall.
Cannot find things in desk or binder	Disorganized	Children with poor visual imagery skills cannot "picture" where they have placed something; instead, they must rummage through everything until they come across it.

Visualization



7. EYE-HAND COORDINATION IN THE CLASSROOM

With good eye-hand coordination, our eyes, brain, and hands work together.

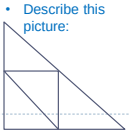
WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY AN EYE-HAND COORDINATION PROBLEM
Illegible work	Sloppy; rushed through work	Children with poor eye-hand coordination cannot get their hands to create what they see; therefore, their writing will not resemble acceptable form.
Does not write on the lines of the paper	Sloppy; rushed through work	Poor eye-hand coordination makes it difficult to stay on the lines. The child may see the line, but not be able to keep the words on it when writing. The inability to stay on the lines might also reflect poor eye-movement control or poor eye teaming.
Poorly spaced work	Sloppy; rushed through work	A child with poor eye-hand coordination may understand the concept of uniform spacing between words but not be able to produce consistent spacing. Again, another visual problem may be involved. For example, uniform spacing can be affected by poor eye-movement control; large spaces may result when the child's eyes overshoot their target.
Slow to copy information off the board or to copy sentences from rough draft to final draft	Daydreaming; short attention span	The child with poor eye-hand coordination needs additional concentration just to write the letters of each word. This extraordinary concentration slows the child's completion of the task.
Hates writing	Personality preference	Since writing letters is such a time-consuming, difficult task for children with poor eye-hand coordination, they may well have negative associations with anything requiring this skill.
Has trouble with multidigit computation problems	Needs more practice with basic facts	The child with poor eye-hand coordination will find it difficult to align the numbers in math problems. When alignment is off, an incorrect answer may result.
Has trouble catching a ball or playing many sports	Uncoordinated	If the eyes and the hands are not working together, then it will be difficult to catch a ball or to meet a pitched ball with a bat. In such cases, the child's hands don't respond in synchrony to what the eyes see; the result is a dropped ball or a strike.

8. VISUAL CLOSURE IN THE CLASSROOM

With good visual closure, we can "fill in the pieces" to see the larger, complete picture.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A VISUAL CLOSURE PROBLEM
Takes a long time to come to a conclusion	Slow thinker	A child who has trouble with basic visual closure tasks will have difficulty applying such skills to abstract reasoning that requires coming to a conclusion.
Keeps coming back for more directions and more explanations for doing a task; seems to need every detail explained	Not an independent worker	A child with visual closure problems makes no inferences and thus has to keep coming back for more information.
Can do parts of an assignment (e.g., take notes and make a bibliography) but can't put the individual parts together to complete the assignment (e.g., write a report on the colonies)	Disorganized	A child with poor visual closure cannot see how each of the parts leads to the end, and therefore cannot put the parts together to finish the assignment.
Has poor reading comprehension	Needs more practice reading and answering questions	A child who has visual closure problems has trouble inferring information; in reading, this leads to difficulty with comprehension questions that call on higher-level thinking skills.

- Difficulties with symmetry
- Sees lots of little bits of information instead of complete ideas (trees instead of forest)
- Describe this picture:



9. LATERALITY AND DIRECTIONALITY IN THE CLASSROOM

With good laterality and directionality skills, we have a reliable reference for knowing where everything is in space; that reference then gives us a sense of order when we look at printed text.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A LATERALITY AND DIRECTIONALITY PROBLEM
Is inconsistent in following directions on where to write name, date, and similar items on a page	Not paying attention	A child with poor laterality skills may truly not know left from right, but of course has a fifty-fifty chance of getting it right; thus the inconsistency.
Has difficulty following directions to find another classroom and may have trouble navigating through the school	Not very bright; not paying attention	A child who cannot visualize directions in space will often get lost or turn the wrong way.
Cannot follow dance-step routines or exercise instructions during physical fitness activities	Not paying attention; goofing around	Instructions such as "Bend your right knee" or "Take three steps to the left" are not enough guidance for students with poor laterality skills, who will often inadvertently move in the wrong direction if they try to follow the words instead of a model.
Reverses letters and words	Possible referral for Student Study Team assessment	Children have to understand their own laterality before they can "see" the direction of specific letters or letter combinations, such as *b* and *d* or *saw* and *was*.
Writes many letters (such as l, e, f) from the bottom up	Sloppy handwriting	Same as above.
Skips over words when reading	Not paying attention	When children have difficulty crossing their own midline, the eyes may take a "hop" instead of smoothly crossing the visual line when reading; this hop may cause children to skip over words.

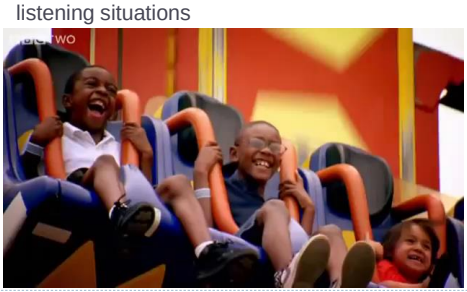
10. AUDITORY-VISUAL INTEGRATION

With good auditory-visual integration, we can process what we hear, in sequence, and then match what was said to a visual representation.

WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY AN AUDITORY-VISUAL INTEGRATION PROBLEM
Slow to answer questions	Not very bright	As soon as a question is asked, children without auditory processing problems are already thinking about the answer. This simple one-step process becomes a two-step process for children with auditory processing problems. While the rest of the class is talking about the answer, these children are still replaying the question, and by the time they are ready to answer, the next question has already been asked.
Slow to follow transitional directions ("Put away your journal, take out your math books, and turn to page 65"); always lags behind the rest of the class and often asks for directions to be repeated	Not paying attention	A child who is not processing information sequentially probably recalls only the last part of the instruction, "page 65." Out of context, this has no meaning. Confused, the child does nothing until it becomes obvious that everyone else has taken out the math book. At this point, the child probably won't remember the correct page and will likely ask for clarification: "What page are we on?"
Can't remember the directions for independent work or for a learning station	Not paying attention	A child who cannot simultaneously visualize information that is given orally has to rely solely on short-term memory to remember directions for independent work or for what to do at a learning station.
Has trouble spelling	Didn't study enough; poor memory skills; doesn't know phonics	A child who can't hear the sequence of sounds in a word may transpose letters or leave out entire syllables when spelling that word. What these children write may match what they hear—but what they hear is not correct.

Can the child can see the teacher?

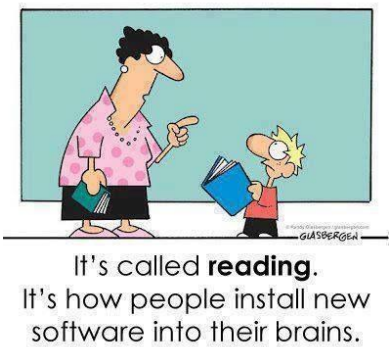
- Encourage eye contact with the speaker in all listening situations



11. VESTIBULAR FUNCTION IN THE CLASSROOM

With a well-functioning vestibular system, movement of our bodies in space and time is automatic. This system is also vital to stabilizing the visual system.

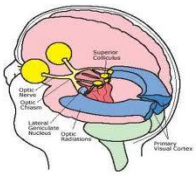
WHAT WE SEE	WHAT WE MIGHT THINK	WHAT'S HAPPENING IF IT'S REALLY A VESTIBULAR PROBLEM
Rocks in chair	Hyperactive	The rocking movement may be the child's attempt to self-regulate his or her level of attention by increasing vestibular input.
Falls off chair frequently	Goofing around; not sitting correctly	All children move around in their seats, but the child with a vestibular problem may not get feedback in time to make an adaptive response to prevent falling off the chair.
Frequently tips chair so that it rests only on its back legs	A risk taker, attention seeker, disrespectful sitting position	Tilting and trying to balance on the back legs of a chair provides vestibular stimulation and increases the child's sense of orientation in space.
Trips easily; bumps into furniture	Clumsy; goofing around; not paying attention	The child's movement receptors may not be supplying adequate information, at least not in time for the child to make an adaptive response and avoid an object in the way.
Is always touching everything	Impulsive; immature	Children with inadequate vestibular feedback about their location in space will often need to rely excessively on tactile information.
Moves in an awkward, uncoordinated way	Clumsy; physically immature	When the child's vestibular system is not providing critical input about what is moving (a body part, the whole body, or the environment), in what orientation, how fast, and in what order, the result is uncoordinated movement.
Unable to maintain focus on moving objects	Inattentive	When the child's vestibular system does not provide a stable reference for integrated neck and eye movements, then fixation, tracking, and eye teaming may be compromised.
Hesitates or declines to join in physical activities	Lacks confidence; sedentary personality	For a child with a hypersensitive vestibular system, all movement is "scary" because it cannot be accurately interpreted or controlled.
Has social and emotional problems	Problems at home	Children with a vestibular problem lack the emotional security of knowing what's going to happen with their bodies when they jump and run and play. They may become manipulative and controlling in order to feel safe, and their insecurity may lead to abnormal anxiety.
Gets in people's personal space	Rude, or unaware of accepted space boundaries for communication	Children who do not know where they are in space cannot always tell when they are invading the space of others.



Modifications to help your students succeed

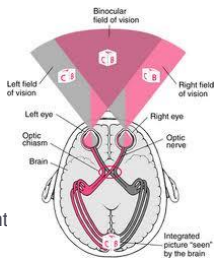
Can the child can see the teacher?

- Classroom placement
  - Move the student closer to the teacher
  - Watch for:
    - Squinting
    - Standing
    - Leaning forward in the chair
    - Tilting the chin up or down
    - Glasses wear (they may not be a current prescription!)



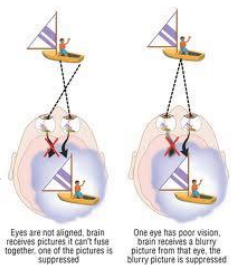
Can the child can see the teacher?

- Place this student in an area with natural lighting if possible. (LIGHT SENSITIVITY)
- Watch for squinting
- Wearing sunglasses or hats indoors
- Athletes who have had a concussion
- Kids with a history of car accident or trauma
- Kids on medication
- Place hand above eyes to shield them from fluorescent lighting



Can the child can see the teacher?

- If the child has a lazy eye (amblyopia) – seat them so that they do not miss the information on that side
- This child should be on the left side of the classroom so all information is presented on the right.

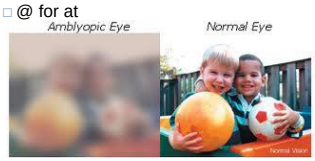


Can the child can see the teacher?

- Atropine Eye drops
- Eye Patching

Can the child can see the board?

- Move the student closer to the chalkboard
- Replace with material to be copied on his/her desk.
- Provide an outline for note taking
- Teach common abbreviations for note taking
  - w/ for with
  - w/o for without
  - @ for at



Is the child visually overwhelmed?

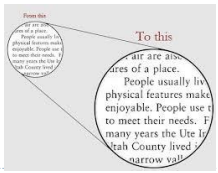
- Reduce conflicting peripheral stimuli by moving the student to the front of the class, as close to the instructor as possible.
- Make an "office" screen
- Organize the classroom with bins and totes to block clutter
- Limit the amount of visuals (bulletin boards, information on whiteboards/chalkboards)
- Wear a baseball cap

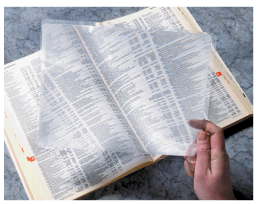
Compare these classrooms

Compare these classrooms

Can the child can see to read?

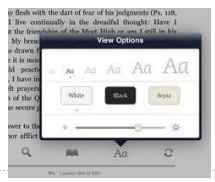
- Large Print guidelines: increase font to 18pt print in order to reduce visual stress.
  - Paper
    - Enlarge on copier
    - Magnification sheet





Make sure the child can see to read

- Large Print guidelines: increase font to 18pt print in order to reduce visual stress.
  - Increase font size on computer
  - Zoom text
  - Increase font size on e-reader

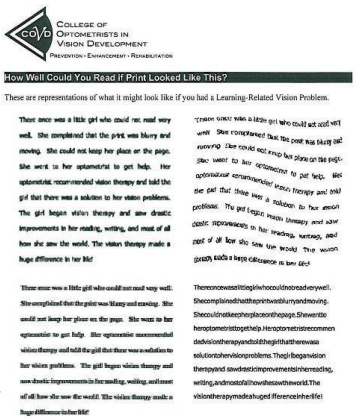


Make sure the child can see to read

- Magnify print
  - Reading glasses

Learning materials are well-spaced and well-organized on the page.

- Cut page apart
- Organize page into columns instead of full width
- Use font, color, text boxes etc. to highlight important information
- Use lists and bulleted points instead of narrative text
- Add graphics



Learning materials are well-spaced and well-organized on the page.

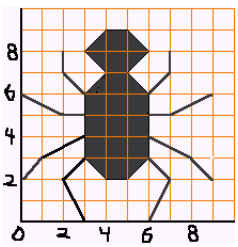
- Block with a window reader

- http://readingwindow.org/home/chapter-5-making-reading-windows/

Window Readers

Learning materials are well-spaced and well-organized on the page.

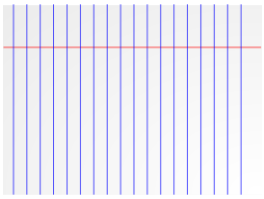
- Put on graph paper or add guidelines



- http://www.printfreegraphpaper.com/

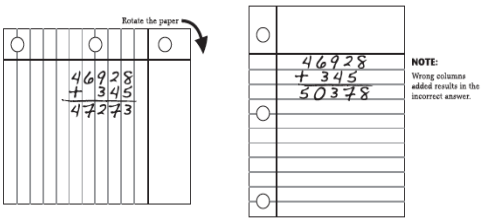
Learning materials are well-spaced and well-organized on the page.

- Place math problems on lined paper with vertical orientation
- http://www.activityvillage.co.uk/printable-lined-paper



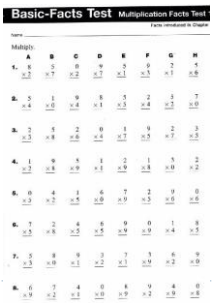
Learning materials are well-spaced and well-organized on the page.

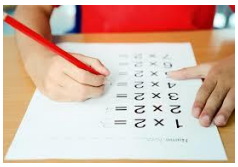
- Put on lined paper with vertical orientation



Learning materials are well-spaced and well-organized on the page.

- Chunk assignments into smaller parts. (For example, less math problems on each page.)





Allow for visual breaks during sustained near point work.

- Look up and away
- Break guidelines: every 20 minutes, look 20 feet away for 20 seconds
- Eye stretches
- Ocular muscle pressure points
- ERGONOMICS!

1 Extreme back side of the eyebrow
2 Middle of the eyebrow
3 Extreme front side of the eyebrow
4 Recess between the back corner of the eye and the nose
5 Recess directly below the iris
6 Point one finger-width from the front corner of the eye
7 Recess between the end of the eyebrow and the point midway between the front corner of the eye and the hairline

Viewing the Computer

Some important factors in preventing or reducing the symptoms of CVS (Computer Vision Syndrome) have to do with the computer and how it is used. This includes lighting conditions, chair comfort, location of reference materials, position of the monitor, and the use of rest breaks.

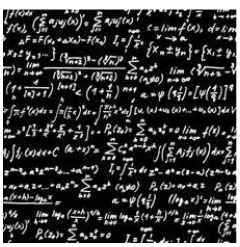
- **Location of computer screen** - Most people find it more comfortable to view a computer when the eyes are looking downward. Optimally, the computer screen should be 15 to 20 degrees below eye level (about 4 or 5 inches) as measured from the center of the screen and 20 to 28 inches from the eyes.
- **Reference materials** - These materials should be located above the keyboard and below the monitor. If this is not possible, a document holder can be used beside the monitor. The goal is to position the documents so you do not need to move your head to look from the document to the screen.
- **Lighting** - Position the computer screen to avoid glare, particularly from overhead lighting or windows. Use blinds or drapes on windows and replace the light bulbs in desk lamps with bulbs of lower wattage.
- **Anti-glare screens** - If there is no way to minimize glare from light sources, consider using a screen glare filter. These filters decrease the amount of light reflected from the screen.
- **Seating position** - Chairs should be comfortably padded and conform to the body. Chair height should be adjusted so your feet rest flat on the floor. If your chair has arms, they should be adjusted to provide arm support while you are typing. Your wrists shouldn't rest on the keyboard when typing.
- **Rest breaks** - To prevent eyestrain, try to rest your eyes when using the computer for long periods. Rest your eyes for 15 minutes after two hours of continuous computer use. Also, for every 20 minutes of computer viewing, look into the distance for 20 seconds to allow your eyes a chance to refocus.
- **Blinking** - To minimize your chances of developing dry eye when using a computer, make an effort to blink frequently. Blinking keeps the front surface of your eye moist.

http://www.aoa.org/patients-and-public/caring-for-your-vision/protecting-your-vision/computer-vision-syndrome

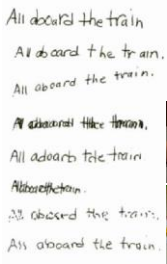
Can the student can see to write?

- Provide "fat" pencils, felt-tipped markers and crayons (yep, even high schoolers)
- Bold lined paper
- Wide rule paper
- Colored guideline paper
- Raised line paper
- Good contrast colors!!!

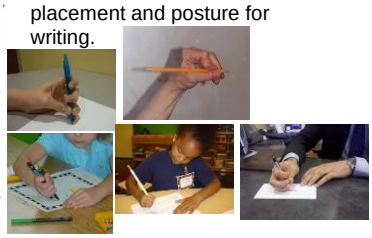
* Writing challenge!



Handwriting accommodations

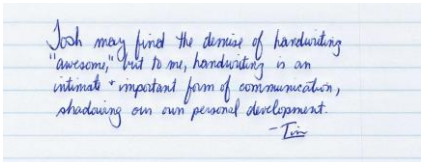


- Encourage use of a pencil grip.
- Encourage proper paper placement and posture for writing.



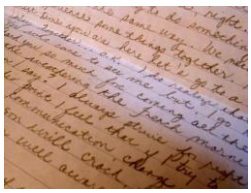
Dysgraphia – difficulty writing

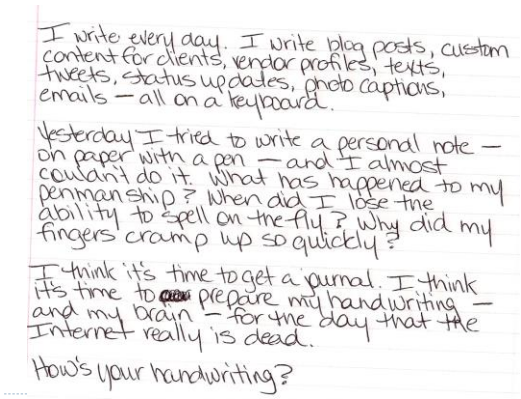
1. RATE of producing written work
2. VOLUME of work to be produced
3. COMPLEXITY of the writing task
4. TOOLS used to write
5. FORMAT of the writing assignment



Writing Speed (RATE)

- Allow more time for note-taking, copying, tests etc.
- Allow student to begin projects or assignments early.
- Include time in the student's schedule to complete work during the school day.
- Keyboarding





Amount of work (VOLUME)

- Give outline of notes with headings, have the student fill in the details for note-taking.
- Dictate work to a scribe.
- Do not penalize score for neatness, spelling (or both) as grading criteria.
- Teach abbreviations.
- Provide a worksheet with problems already on it instead of having the student copy the problems.
- Allow answers in phrases and pictures.
- Shorten the length requirements.

Simplify the assignment (Complexity)

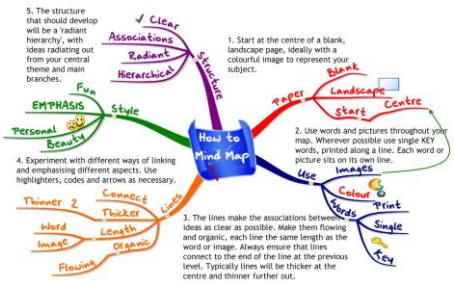
- Have samples for student (cursive and printed letters).
- Include a laminated template of the format for the assignment. Make a cut-out where the name, date, and title belong. Use as a template for the assignment.
- Break assignment into stages.
- Allow editing marks instead of requiring a recopied product.
- Speaking spellcheckers or proofreading.
- Group projects.

Writing accommodations (TOOLS)

- Use paper with raised lines
- Try other line width papers
- Graph paper for math, or turn lined paper sideways to line up columns of numbers
- Mechanical pencils
- Various pencil grips
- Keyboarding
- Speech recognition software

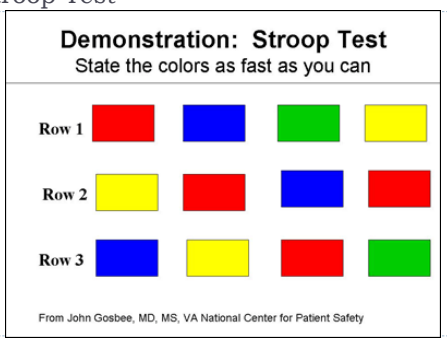
Alternatives (FORMAT)

Oral reports --- Visual projects



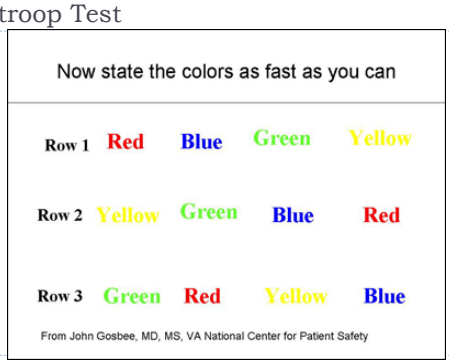
Aids to Visual Learning

Stroop Test

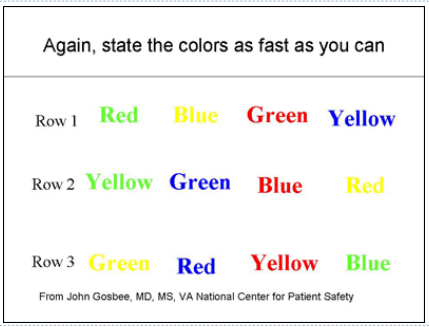


http://patientsafetyed.duhs.duke.edu/module_e/stroop_test.html

Stroop Test



Stroop Test



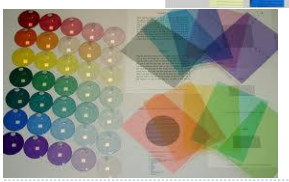
This is an obvious demonstration of how a simple task, if set up in an unfavorable way, can be very prone to error.

Visual Ergonomics

- Furnish a slanted reading and writing surface.
- Slant boards: Reading materials should be tilted twenty degrees off the table
- Foot stool
- Computer screen position
- All near vision tasks should be performed at an appropriate distance, the ideal being the length of the individual's forearm called Harmon's Distance (elbow to middle knuckle of fisted hand).

Lighting

- Make use of natural lighting and full spectrum bulbs.
- Task lighting
- Contrast filters
- Irlen filters



Reading guides

- Provide highlighter markers to help with reading.
- Bookmarks
- Reading guide
- Paper blocking
  - Spreadsheets*

Table 7. Race/Ethnicity of USA and Canadian IMO Participants, MOSP Participants, and Top 5-Ranked Math Department Faculty

	Male					Female				
			Other Non-Hispanic					Other Non-Hispanic		
	Asian[a]	Jewish	White[b]	URM[c]		Asian	Jewish	European-born	Canadian-and USA-born	URM
USA IMO Team 1988-2007										
No. Students (%)	40 (33)	~25 (21)	~50 (42)	0 (0)		2 (2)	1 (0.8)	0 (0)	2 (2)	0
% Population[d]	1.5-2.3	~1.0	41-38	~10-15		1.4-2.2	~1.0	0.8	38-35	~11-14
%/% Population	18	~21	~1.1	0 (0)		0.9	~0.8	0	0.05	0
Canada IMO Team 1988-2007										
No. Students (%)	68 (50)	~12 (10)	~36 (30)	0 (0)		5 (4)	0 (0)	5 (4)	2 (2)	0
% Population		~0.6	~43	~7		5	~0.6	~2.0	~39	~7
%/% Population	10	~17	~0.7	0 (0)		0.8	0	2	~0.04	0
MOSP 1998-2007										
No. Students (%)	216 (42)	~56 (11)	~209 (40)	2 (0.4)		22 (4)	5 (1)	3 (0.6)	5 (1)	0
%/% Population	28	~11	~1.0	~0.03		2.1	~1	1	0.03	0
Profs. Top 5 USA Math Depts.[e,f]										
No. Tenured (%)	18 (18)	~33 (18)	~120 (67)	1 (0.6)		1 (0.6)	2 (1)	4 (2)	1 (0.6)	0 (0)
No. Jr. Faculty (%)	7 (10)	~6 (9)	~30 (50)	1 (2)		2 (4)	0 (0)	7 (13)	3 (6)	0 (0)
%/% Population	6	~16	~1.7	~0.06		0.7	~0.9	3	0.03	0

Reading guides

Allow the use of a finger in following along the line of print when reading.

A marker assists, but direct tactual finger contact with movement will offer greater support and helps with integration

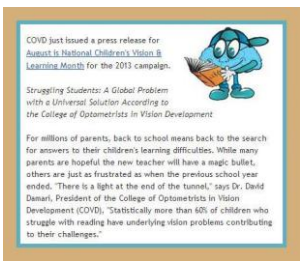
Allow students to choose whether or not they want to read aloud.

*One of the causes of extreme anxiety in children

*Emotional state for learning?

Adequate time to complete assignments (slow visual tracking or processing speed):

- Make more time available on timed tests.
- Minimize the amount of homework
- Short visual work periods will tend to reduce stress and related fidgeting or fatigue.



COVD just issued a press release for August is National Children's Vision & Learning Month for the 2013 campaign.

Struggling Students: A Global Problem with a Universal Solution According to the College of Optometrists in Vision Development

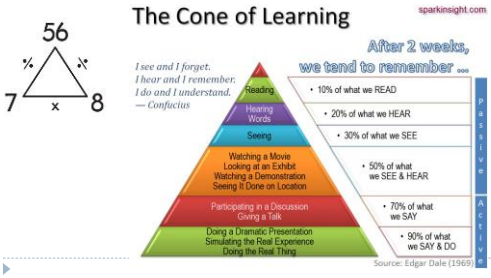
For millions of parents, back to school means back to the search for answers to their children's learning difficulties. While many parents are hopeful the new teacher will have a magic bullet, others are just as frustrated as when the previous school year ended. "There is a light at the end of the tunnel," says Dr. David Damari, President of the College of Optometrists in Vision Development (COVD), "Statistically more than 60% of children who struggle with reading have underlying vision problems contributing to their challenges."

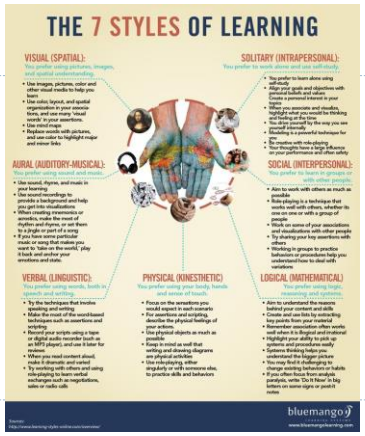
Allow for kinesthetic and multi-sensory learning.

- Tasks requiring fine-motor and paper and pencil responses should be restructured to allow more gross-motor involvement, for example, copying similar but larger patterns.

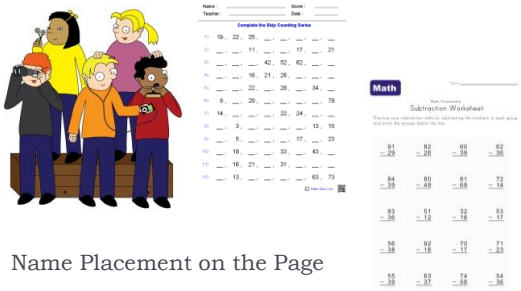
Allow for kinesthetic and multi-sensory learning.

- Encourage student to verbalize letters of spelling words while finger tracing them on a hard surface. Then "spell" the same words in the air with a finger to encourage visualization and visual memory





Allow students to give test answers another way: pointing, speaking, drawing, touching



Name Placement on the Page

Examples of accommodations available on College Board tests

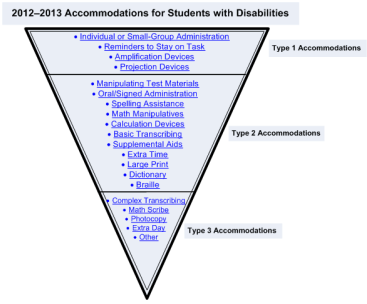
- **Presentation**
- Large print (14 pt., 20 pt.)
- Reader (Note: Reader reads entire test)
- Fewer items on each page
- Colored paper
- Use of a highlighter
- Sign/orally present instructions
- Visual magnification (magnifier or magnifying machine)
- Auditory amplification
- Audiocassette
- Colored overlays
- Braille
- Braille graphs
- Braille device for written responses
- Plastic covered pages of the test booklet

Responding

- Verbal; dictated to scribe
- Tape recorder
- Computer without spell check/grammar/cut & paste features
- Record answers in test booklet
- Large block answer sheet

Timing/scheduling

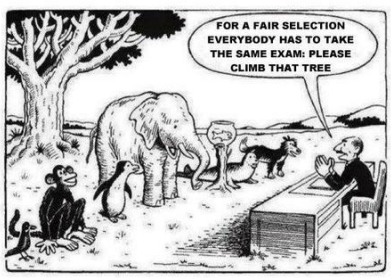
- Frequent breaks
- Extended time
- Multiple day (may or may not include extra time)
- Specified time of day



Setting

- Small group setting
- Private room
- Screens to block out distractions
- Special lighting
- Special acoustics
- Adaptive/special furniture/tools
- Alternative test site (with proctor present)
- Preferential seating

Testing:



Demonstrations

Common Diagnostic Codes in Vision Therapy

368.01 .....Strabismic amblyopia
368.03 .....Refractive amblyopia
368.30 .....Binocular vision disorder/fusional vergence dysfunction
368.31 .....Suppression of binocular vision
368.32 .....Simultaneous visual perception without fusion
368.33 .....Fusion with defective stereopsis
368.34 .....Abnormal retinal correspondence
378.01 .....Monocular esotropia
378.05 .....Alternating esotropia
378.11 .....Monocular exotropia
378.15 .....Alternating exotropia
378.21 .....Intermittent monocular esotropia
378.22 .....Intermittent alternating esotropia
378.23 .....Intermittent monocular exotropia
378.24 .....Intermittent alternating exotropia
378.35 .....Accommodative component in esotropia
378.83 .....Convergence insufficiency or palsy
378.84 .....Convergence excess or spasm
378.85 .....Anomalies of divergence
378.9X .....Disorder of eye movements
379.57 .....Deficits of saccades
379.58 .....Deficits of smooth pursuit

Common Procedure Codes To Describe a VTE

99241-99244 .....Consultation codes
99212-99215 .....Evaluation and Management (E/M) office visit
92060 .....Sensorimotor evaluation
92004 .....Comprehensive eye examination
92002 .....Intermediate eye examination
92015 .....Refractive Analysis
99199 .....Unlisted special service, procedure or report

Sample Accommodation List

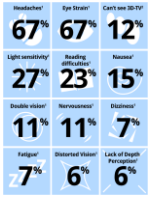
1. Please minimize the amount of homework assigned to this student as they are expected to practice a considerable amount of individualized vision therapy exercises out of the office.
2. For all standardize testing, increase font to 18pt print in order to reduce visual stress.
3. All near vision tasks should be performed at an appropriate distance, the ideal being the length of the individual's forearm called Harmon's Distance (elbow to middle knuckle of fisted hand).
4. Reading materials should be tilted twenty degrees off the table (slant board is recommended).
5. Allow the use of a finger in following along the line of print when reading. Direct tactual finger contact with movement will offer greater support and helps with integration.
6. Encourage eye contact with the speaker in all listening situations.
7. Reduce conflicting peripheral stimuli by moving the student to the front of the class, as close to the instructor as possible.
8. Chunk assignments into smaller parts. (For example, less math problems on each page.)
9. Minimize chalkboard/overhead-to-desk copying, substitute desk copy work when possible.
10. Encourage use of a pencil grip.
11. Encourage proper paper placement and posture for writing.
12. Don't penalize for poor handwriting.
13. Incorporate the use of directionality (distinguishing between Right and Left) whenever possible.
14. Motor involvement can help to modulate attention. Use of a stress ball or another small object can help maintain focus longer.
15. Allow short (1-2 minute) breaks during sustained near work.

When You Observe This Behavior	Try This Accommodation
Difficulty following a plan (has high aspirations but lacks follow-through); sets unrealistic goals (sets out to make straight A's but makes D's)	•Assist student in setting long-range goals; break the goal into realistic parts. •Use a questioning strategy with the student (e.g., What do you need to be able to do this?). Keep asking question until the student has reached an obtainable goal. •Have student set clear time lines, and establish how much time he or she needs to accomplish each step. •Monitor student's progress frequently. •Be patient; students frequently need extra attention and to have items repeated.
Difficulty sequencing and completing steps to accomplish specific tasks (writing a book report or term paper, solving division problem)	•Break up task into workable and manageable steps. •Provide examples and specific steps to accomplish task.
Shifting from one uncompleted activity to another without closure	•Define the requirements of the completed activity (e.g., Your math is completed when all six problems are completed and corrected; do not begin the next task until it is finished).
Difficulty following through on instructions from others	•Gain student's attention before giving directions. Use alerting cues. Accompany oral directions with written directions. •Give one direction at a time. Quietly repeat directions to the student after they have been given to the rest of the class. Check for understanding by having the student repeat the directions. •Make sure you mean it. •Do not present the command as a question or a favor. •Place general methods of operation and expectations on charts displayed around the classroom and/or sheets to be included in student's notebook. •Direct instructional techniques that engage all the student's senses; help assure that the student's strongest learning pathway is tapped. •Make up job or work cards.

Testing Accommodation	Possibilities
Change the presentation format.	•Read the test items to the student, unless the assessment is a test of reading skills. •Let the student read the test items aloud as long as she works on the assessment. •Provide copies of the test on audiotape, in Braille, or in large print format. •Let the student use assistive technology for magnification or amplification, if needed. •Provide a sign language interpreter to interpret oral directions. •Use symbols on the test or answer form that help student follow directions, such as an arrow or a stop sign. •Reread or explain the directions during the test if the student needs it. •Underline or highlight important words in the directions or test items. •Group questions so that similar kinds of items are together. •Block matching questions into small groups of four or five items. •Provide a list of words to use for fill-in-the-blank questions.

Helpful links

1. www.covd.org – The College of Optometrists in Vision Development
2. www.oepf.org – The Optometric Extension Program Foundation
3. vision-learning.org -- The Vision and Learning Forum (Colorado-based)
4. www.bouldervt.com – Boulder Valley Vision Therapy center website – Dr. Simonson will post answers to any questions, references/links mentioned in this presentation, and a copy of the handout on this site.
5. http://www.aoa.org/patients-and-public/resources-for-teachers – The American Optometric Association
6. http://www.3deyehealth.org/ -- More information about 3D use in the classroom



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