Classroom Recommendations for Students with Visual Issues

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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?

We Learn...

10% of what we read
20% of what we hear
30% of what we see
40% of what we do
70% of what we experience
95% of what we teach to others

- William Glasser
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.

**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*

**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!

**Common Vision Problems:**

1. Binocular Vision Disorders:
   - Convergence Insufficiency
   - Convergence Excess
   - Divergence Insufficiency
   - Divergence Excess

2. Strabismus:
   - Esotropia
   - Exotropia
   - Hypertropia

3. Deficient Stereopsis

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

Classroom Accommodations for Students with Visual Issues

1. DIFFICULTIES WITH SYMMETRY
   - Sees lots of little bits of information instead of complete ideas (trees instead of forest)
   - Describe this picture:

2. Encourage eye contact with the speaker in all listening situations

3. Laterality and Directionality in the Classroom
   - As a child of a question is asked, children without auditory-visual integration are already thinking about the answer. This simple one may prevent becoming a habit. Even simple questions can become difficult for children who have been working on it. The child is not only being asked a question but is also being asked to think about the question. The child must be ready to answer it. The child must be ready to answer it.

4. Auditory Visual Integration
   - If a child is not paying attention, the teacher may need to restate the question. The child may need to restate the question. The child may need to restate the question. The child may need to restate the question. The child may need to restate the question.

5. Vestibular Function in the Classroom
   - For all children, the vestibular system is the most important sensory system. It is responsible for the sense of balance and spatial orientation. The vestibular system is responsible for the sense of balance and spatial orientation. The vestibular system is responsible for the sense of balance and spatial orientation.

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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!)

- **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.

- **Atropine Eye drops**
- **Eye Patching**

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**Modifications to help your students succeed**

- 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 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

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
Classroom Accommodations for Students with Visual Issues

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

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

Window Readers

[Image: http://www.printfreegraphpaper.com/]

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

- Block with a window reader

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

- Put on graph paper or add guidelines

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Classroom Accommodations for Students with Visual Issues

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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.

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

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

- Put on lined paper with vertical orientation

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 to 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 an anti-glare screen. These screens reduce 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 while 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

Stroop Test

Demonstration: Stroop Test
State the colors as fast as you can

<table>
<thead>
<tr>
<th>Row 1</th>
<th>Red</th>
<th>Blue</th>
<th>Green</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 2</td>
<td>Yellow</td>
<td>Green</td>
<td>Blue</td>
<td>Red</td>
</tr>
<tr>
<td>Row 3</td>
<td>Green</td>
<td>Red</td>
<td>Yellow</td>
<td>Blue</td>
</tr>
</tbody>
</table>

From: John Goebbe, MD, MS, VA National Center for Patient Safety

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

Stroop Test

Now state the colors as fast as you can

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From: John Goebbe, MD, MS, VA National Center for Patient Safety

Again, state the colors as fast as you can

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This is an obvious demonstration of how a simple task, if set up in an unfavorable way, can be very prone to error.
Classroom Accommodations for Students with Visual Issues

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

Reading guides
- Allow the use of a finger in following along the line of print when reading.
- A marker assists, but direct tactile 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.
Classroom Accommodations for Students with Visual Issues

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.

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

Name Placement on the Page
**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

**Sample Accommodation List**

1. Please minimize the amount of homework assigned to this student as they are expected to practice a considerable amount of individual 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.
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. website to 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.

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