The Visual System and It’s Impact on Learning

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Handwriting

Thumb mobility and webspace

Wrist Extension

Bilateral Coordination
Posture and Trunk/UE Stability

Primitive Reflexes

Vision

Attention/Behavior/Motivation

presented by Kimberly M. Wiggins, OTR/L
Vision

According to the American Optometric Association (AOA): 80% percent of all learning is acquired through vision.

When does your school assess near point vision?
American Optometric Association (AOA) Exam Frequency Guidelines

- According to AOA guidelines, vision exams for **ALL** healthy pediatric patients should be given at the following times:
  - By 6 months
  - At 3 years of age
  - Before 1st grade
  - Every 2 years thereafter
- **NOTE:** Children who are found to be at risk for visual problems may be examined annually or as recommended by your eyecare professional.
McDowell Vision Screening

- **Ages:** 2 1/2 to 5 1/2 years of age
- **Administration Time** 10 to 20 minutes
- **Scores** Simple pass/fail criteria
- **$160** for full test or **$50** for manual only

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Vision Skills Appraisal (VSA)

- Grades K-4
- Administration Time: 20 minutes
- Scores: Pass/Fail
- $100
FREE VERA SCREENING

- Grades 2-8
- [http://visualscreening.com](http://visualscreening.com)
- Free reports written to doctor and parent
- Free exercises!
VERA Program Overview

THE TWO VERA PROGRAMS:
VERA SE "School Edition" is a complete routine vision screening and reporting suite for school and institutional use and includes the necessary test lens flipper. VERA v3.5 contains all VERA SE components and adds the visual efficiency screening, the associated report and the additional required test lens flipper.

ABOUT THE PROGRAM DOWNLOAD:

- The trial download is the full VERA v3.5 program with 50 free screenings included. VERA system requirements are Microsoft Windows, 200Mb free disc space and a 15"- 21" monitor.
- Shortcuts to the "User's Guide" and "Educator and Occupational Therapist Guide" in .pdf form will be placed on your desktop, so you don't have to download the manuals separately.
- Please print the User Guide for your reference as you use the program.
- You may temporarily use a pair of +2.00 ready-made readers for the hyperopia screening.
- When you purchase a VERA program, you'll receive an activation code which enables unlimited screening, places your preferred personal or facility name into the report headings and saves any screening data you've accumulated.
- You can proceed to the download now or see additional program download features.

VERA Program Download

Get the individual VERA manuals:

VERA v3.5 User Guide

VERA 3 Behavioral Checklist
PDF used to select subjects for the visual efficiency screening.

VERA SE User Guide

VERA Educator & Occupational Therapist Guide
PDF containing information for teachers and occupational therapists to support visually deficient students.
### Sample two-week schedule for visual skills enhancement exercises

#### Week 1

<table>
<thead>
<tr>
<th>Monday</th>
<th>2 minutes</th>
<th>Monday</th>
<th>2 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Eye Stretch</td>
<td></td>
<td>Head Swing</td>
<td></td>
</tr>
<tr>
<td>Closed Eye Stretch</td>
<td></td>
<td>Flashlight Duel</td>
<td></td>
</tr>
<tr>
<td>Crossing the Eyes</td>
<td></td>
<td>Look and Point</td>
<td></td>
</tr>
<tr>
<td>See Me Clearly (2 minutes each eye)</td>
<td>4 minutes</td>
<td>See Me Clearly</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Double String</td>
<td>5 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tuesday**  
Repeat Monday’s schedule  
15 minutes

<table>
<thead>
<tr>
<th>Wednesday</th>
<th></th>
<th>Tuesday</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Swing</td>
<td>2 minutes</td>
<td>Swinging Ball</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Follow the Bug</td>
<td>4 minutes</td>
<td>Flashlight Tag</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Look and Point</td>
<td>4 minutes</td>
<td>Trombone</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Trombone (2 minutes each eye)</td>
<td>4 minutes</td>
<td>Trombone</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Double String</td>
<td>5 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Thursday**  
Repeat Wednesday’s schedule  
19 minutes

<table>
<thead>
<tr>
<th>Friday</th>
<th>15 minutes</th>
<th>Thursday</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeat Monday’s schedule</td>
<td>15 minutes</td>
<td>Crossing the Eyes</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Head Swing</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Follow the Bug</td>
<td>4 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double String</td>
<td>10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18 minutes</td>
</tr>
</tbody>
</table>

**Friday**  
Open Eye Stretch  
2 minutes
Closed Eye Stretch  
2 minutes
Flashlight Duel  
4 minutes
Swinging Ball  
5 minutes
See Me Clearly  
4 minutes

17 minutes

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INTEGRATING VISUAL EXERCISES AND CLASSROOM INSTRUCTION
What is Vision Therapy?

- A progressive program of vision procedures
- Performed under doctor supervision
- Individualized to fit the visual needs of each patient
- In-office, 1-2 weekly sessions of 30-60 minutes
- Homework sessions generally take between 15-30 minutes and should be done 4-5 times each week,

http://covd.org/Home/AboutVisionTherapy
“There are crossovers between occupational therapy and vision therapy, particularly in the area of visual perception, eye-hand coordination and visual motor integration, though occupational therapists do not receive near the depth of training in vision nor are they trained in the use of lenses, prism and filters. Vision is a sensory-motor set of systems, so many times if a patient has difficulty with sensory integration, it is co-managed with occupational therapists.”
A child that sees like this can pass a vision screening.

A child that sees like this can pass a vision screening.

A child that sees like this can pass a vision screening.

A child that sees like this can pass a vision screening.

So, is it any wonder why your child can’t sit still for 20 minutes to do homework?

How Do We Use Vision to READ

• aim two eyes at the same point simultaneously and accurately,
• focus both eyes to make the reading material clear,
• continue or sustain clear focus
• move two eyes continually as a coordinated team across the line of print.
• When we move our eyes to the next line of print, we continue with the process.
How Do we Use Vision to WRITE

- Writing works in the reverse order to reading.
- Start with a mental image and code it into words.
- Pencil control and making sense!
- Focus eyes and move them together
Who is in Charge???

1. **Acuity** – *only optometry*
   - Near/far sightedness
   - Stigmatism

2. **Efficiency** – *optometry and vision therapy (OT can overlap)*
   a) Binocularity
   b) Ocular motility

3. **Processing** – *vision therapy (OT significantly overlaps)*
   a) Visual spatial
   b) Visual analysis
   c) Visual integration
1. Acuity

- Sharpness of eyesight (how clearly you can see)
- Near VS Far Sightedness
- Treated with medications, lenses, or surgery
2. Efficiency

- Vergence is the motor ability to coordinate eyes together
- Possible conditions include:
  - Phorias
  - Strabismus
  - Suppression
  - Ambylopia
2a. Binocularity

- sensory ability to interpret 2 images into 1 using depth perception
  - Using 3 dimensions (width, height, depth)

**Signs/Symptoms:**
- Double vision
- Words moving around on a page
- Motion Sickness
- Difficulty catching/hitting a ball
- Decreased depth perception
- Inefficient eye-hand or eye-body coordination
- Short attention span for near work
- Headaches
- Closing or covering of one eye
- Excessive blinking
- Holding a book too close
- Poor handwriting
- Reduced reading comprehension
Practice using the cross-eyed viewing method

Can you cross your eyes and make a third mouse in the middle of the other two who has both a tail and whiskers? If you do it right, the circles below the middle mouse should look three dimensional—the little circle in the center should look closer to you than the bigger circle on the outside.

Rainbow Tunnel

Here's something fun! Cross your eyes and look at the colored circles below. Does it look like you're looking down a rainbow tunnel?
2b. Ocular Motility
(poor eye movement control)

- how well and efficiently you move your eyes
  - Fixation
  - Saccades
  - Pursuits

**Signs/Symptoms:**
- Uses of a finger or marker when reading
- Loss of place when reading, writing or copying
- Difficulty copying from the board
- Skipping or repeating words
- Head movement side to side while reading
- Difficulty in sports (i.e. golf VS basketball)
Ocular Motility Activities

- Scanning with eyes closed
- Finger Dancing
3. Visual Processing

Treatment – vision therapy and OT overlap

a) Visual Spatial
b) Visual Analysis
c) Visual Integration
3a. Visual Spatial Skills

skills we use to understand directional concepts to organize our visual space

- Laterality
- Directionality
- Bilateral integration

**Signs/Symptoms:**
- Lack of coordination and balance (clumsy)
- Difficulty learning left and right
- Reverses letters or numbers
- Difficulty with activities involving rhythm
- Not good at sports
- Does not cross the midline when doing tasks (switches objects from hand to hand)
- Does not use nondominant hand for support when writing
- Rotates body when writing or copying (to not cross the midline)
Visual Spatial Activities

- Reversals – LetterReflex app
- Flashlight Targets
- Scanning the Room on a balance board
3b. Visual Analysis/Discrimination

used to identify, sort, organize, store, and recall visual information

**Signs and Symptoms**
- Trouble learning the alphabet
- Trouble recognizing words
- Mistakes words with similar beginnings
- Overgeneralizes - confuses minor likenesses and differences
- Does not recognize the same word if repeated again on a page
- Trouble with remembering and writing letters and numbers
- Distractible
- Short attention span
- Problems concentrating
- Traces or touches figures
- Difficulty with understanding instructions
- Hyper or hypo active
3b. Visual Analysis/Discrimination

- **Figure Ground** – ability to search for a specific form and ignore all other stimuli (Activity: Hidden pictures, board games with confusing backgrounds)
3b. Visual Analysis/Discrimination

- **Visual Form Recognition/Discrimination & Constancy** – ability to discriminate differences in (Activity: Tetris, “DOG=Dog=dog”)

- **Visual Closure**: given clues that represent a full object (Activity: dot to dot activities, Wheel of Fortune, pictures or puzzles with missing pieces)
Visual Spatial Memory: ability to recall, identify, or reproduce i.e. picturing lost objects (Activity: Memory card games) http://playwithyourmind.com/memory-workout-program/spatial-memory-game/
Spatial Memory

#1) The object of this memory game is to remember the location of each of the shapes.

#2) You will be presented with a series of shapes arranged randomly on the screen and given a few moments to memorize their location. Then, the pieces will move to the top left corner and you will have to drag them and place them as they were originally.

#3) Your score is based on how close you are with each shape. Once you hit 'All Done' to submit your guesses, the actual locations will flash briefly so you can compare.

Tags: brain games, memory exercise, Memory Games, memory test, spatial memory
3b. Visual Analysis/Discrimination

- **Visual Speed:** Quickly and efficiently copying an assignment off the chalkboard with only a few glances (Activity: Near/Far Fixations)
Let’s Do It Write
by Gail Kushner, OT

- **Copying From the Board ($19.95):** Finally, a book to help teach children to write legibly and quickly while copying from the board.
- Begins with visual activities for fixating and tracking, the same ocular control needed to look back and forth from board to desk.
- Pages to assist in developing proper copying skills.
- Includes an evaluation section as well.

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3c. Visual Motor Integration

**Signs and Symptoms:**
- Sloppy writing or drawing skills
- Can't stay on or in the lines
- Erases excessively
- Poor organization
- Does not recognize mistakes
- Close working distance
- Poor posture when writing
- Excessive or inadequate pencil grip
- Trouble aligning numbers in columns for math problems
- Can't get answers on paper
- Tests poorly even if they know the subject
3c. Visual Motor Integration

- Coordinates with gross-motor movement and fine-motor movement.
- Used to plan, execute and monitor motor tasks (including threading a needle, tying shoe laces, catching or hitting a ball.
- It is also essential in academic performance.
- If visual perception is average, their visual motor skills may be below average.

http://staff.fcps.net/rcooper/visual.htm
Other Visual Activities

- Magnifying Glass increases area & success
- Penny Drop
- Eye Dropper and quarter
- Bubble Piercing
- Sticky Bubbles or NoPop Bubbles

Load skills by asking questions:
- Mazes, eye dropper, bubble piercing, etc.
FREE Activities

- [www.Visualscreening.com](http://www.Visualscreening.com) (Parent/OT/Teacher Guides)
- [highlights for kids FUN FINDER](http://www.puzzlemaniakids.com)
- [http://www.puzzlemaniakids.com](http://www.puzzlemaniakids.com)
- [http://eyecanlearn.com/](http://eyecanlearn.com/)
http://www.visionedseminars.com

- $159 for vision remediation software
  - Eye Movement Problems saccadic dysfunction
  - Visual Perceptual Problems
    - visual spatial dysfunction
    - visual analysis dysfunction
    - visual motor integration dysfunction
Ann Arbor Publishers (i.e. letter and sentence tracking $22ea.)

Nintendo DS: Flash Focus
Visual Perception Toys/Games

- Pictureka
- Qwirkle
- Blokus
- Animal Soup
- Space Faces
- Pix Mix
- Loopz

- Sequence for Kids
- Stare
- Acuity
- Jungle Speed
- [Uptoten.com](http://www.jigzone.com/) (1353 free)
UpToTen Search engine - find your favorite games

Lost a game? Or looking for new things to do? Just type a question or click on a category. Why not try "Boowa & Kwala take a photo"?

If you encounter problems: help@uptoten.com
<table>
<thead>
<tr>
<th>Title / Description</th>
<th>Category</th>
<th>Age</th>
<th>Popularity</th>
<th>Skills to Develop</th>
</tr>
</thead>
<tbody>
<tr>
<td>The busy bee honeycomb puzzle</td>
<td></td>
<td>4 yrs and over</td>
<td>★★★★★★★</td>
<td>🐜 🐝 🌿 🌸 🍯</td>
</tr>
<tr>
<td>Sixty-six super stickers...</td>
<td></td>
<td>5 yrs and over</td>
<td>★★★★★★★</td>
<td>🎨 🎀 🞋 🎨 🎨</td>
</tr>
<tr>
<td>Oh dear, the boat has not been sailing for so long, that its sail is in ruins! Return at...</td>
<td></td>
<td>6 yrs and over</td>
<td>★★★★★★★</td>
<td>🛥️ 🛥️ 🚤 🚤 🚤</td>
</tr>
<tr>
<td>Boowa and Kwala love sugar</td>
<td></td>
<td>3 yrs and over</td>
<td>★★★★★★★</td>
<td>🐼 🍯 🌸 🌸 🍯</td>
</tr>
<tr>
<td>Oh No! Kwala has accidentally torn up the family photo</td>
<td></td>
<td>3 yrs and over</td>
<td>★★★★★★★</td>
<td>🐼 🌸 🌸 🌸 🌸</td>
</tr>
</tbody>
</table>
Automaticity

- Automaticity is key in efficient learning.
- Learn the skills well so that they become automatic and easy so that you can do other things at the same time!
  - Learning to ride a bike
  - Zippering your coat
  - Writing and thinking
Resources

- www.brainandeyeconnection.com
- www.visionandlearning.com
- VERA Screening www.visualscreening.com
- www.covd.org College of Optometrists in Vision Development
- American Optometric Association: www.aoa.org
- www.visionedseminars.com
• Highlights for kids FUN FINDER
• [http://www.puzzlemaniakids.com](http://www.puzzlemaniakids.com)
• McDowell, P. M., McDowell, R. L. [McDowell Vision Screening Kit](http://www.westernpsych.com). Western Psychological Services.
• Kushnir, G. [Let’s Do It Write: Copying From The Board](http://www.gkushnir.com/). Achai Publishers.
THANK YOU!!!!

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