

## Introduction

Visual Impediments to Learning (VIL) are the most common undetected cause of apparent learning and reading difficulties. VIL even affect children who are apparently good learners, and cause them to struggle needlessly and even report a variety of medical concerns. If vision problems are not detected and properly managed, the child will not be able to reach their potential. For children suspected of reading and learning problems, including problems of attention, hyperactivity, and emotional stress, addressing vision first is the only means of achieving meaningful therapeutic ends through more traditional methods of remediation.

Vision is complex, and standard checks of 'eyesight' using eye charts are virtually of no use in detecting the most significant problems. This information sheet provides a brief summary of the elements of vision, as well as a checklist to try to determine whether a child is likely to be struggling against 'invisible' vision troubles. These are 'invisible' because they are most often not detected through psychological or medical assessments, and will not be reported by the student.

Of great importance is the fact that in EVERY school classroom there are many children who are certain to struggle silently with vision problems, and this is even more of a problem among some ethnicities. Early assessment of vision and management of VIL is critical in avoiding unnecessary testing and in accelerating reading and learning therapies.

## What is Vision?

1. Eyesight (visual acuity as measured by eye charts) tells you as much about your vision as your strength or height tells you about your ability to run a marathon.
2. Vision is an ongoing physiological process that integrates input from the eyes, complex muscle systems, various cognitive elements (some deliberate, others autonomic/sub-conscious), hearing, balance, and body sense (proprioception, touch, and kinesthetic sense).
  - a. Vision is related neurologically to 2/3 of the brain's functions.
  - b. 80% or more of what is done in the classroom relies on effortless, responsive, and accurate Visual Signal Acquisition skills. (That part of vision that allows us to physically find and fixate upon targets.)
  - c. Classrooms are especially visually intensive.
    - i. Increasing reliance upon text-based 'instruction' and reading.
    - ii. Over-reliance upon near work, especially computers.
  - d. There is currently no meaningful allowance for differences in visual strength in the classroom, yet it is the most important sensory element for neo-traditional learning; this is partly because of how we teach, but also because it integrates key senses at a very low level.
    - i. Like food, sleep, and water, vision operates at a very low level, like the basic input/output systems in a computer. Before anything complex can work, like advanced software, vision must be secured and strong.

### 3. Physical Elements of Vision – 'Hardware'

- a. Alignment (aka posture)
  - i. Problems include
    1. Strabismus (vertical, horizontal) including Alternating Strabismus and Divergence Excess
    2. Convergence Insufficiency
    3. High Heterophoria
- b. Focus
  - i. Accommodative Insufficiency
  - ii. Accommodative Infacility
- c. Eyesight
  - i. Myopia (not often a major concern)
  - ii. Hyperopia (most often a problem)
  - iii. Astigmatism (most often a problem)
  - iv. Amblyopia ('Lazy/Bad' Eye)
- d. Saccades
  - i. Gross (not often a major concern in standard classrooms)
  - ii. Fine (interferes with reading/targeting)
  - iii. 'Tracking' (interferes with reading)
- e. Pursuits
  - i. Not often a problem, but a good indicator of neuro-developmental status.
- f. Spatial Awareness Inputs from Retina
  - i. Central (macula)
  - ii. Peripheral (outside of macula)
  - iii. The abilities to move easily from central to peripheral awareness and to balance these two are critical in reading/writing and in classroom participation. This ability is in vision, but also audition, and physical (body) awareness.
- g. Other Input Elements:
  - i. Balance
  - ii. Hearing/Audition
  - iii. Somatosensation
  - iv. Kinesthesia/Proprioception

#### 4. **Cognitive Elements of Vision** – *'Software'*

- a. VSP/VIP Elements (According to TVPS-III, and reformulated through other neuropsychological paradigms)
  - i. Visual Discrimination
  - ii. Visual Memory
  - iii. Spatial Relationships
  - iv. Form Constancy
  - v. Sequential Memory
  - vi. Figure-Ground
  - vii. Visual Closure
- b. Central vs. Peripheral Spatial Awareness
  - i. From cortical and subcortical structures.

- ii. Works with input from retina as well as balance and hearing.
  - iii. Necessary in guiding eye movements, especially rapid, automated saccadic movements.
  - iv. Affects span of recognition (the reading 'quantum')
- c. Visualization

## Visual Impediment to Learning (VIL) Sign/Symptom Checklist

If you suspect a child of having a reading or learning problem, this checklist can help to determine if there are significant Visual Impediments to Learning (VIL). The scale is weighted so that some elements are more indicative of VIL than others.

Instructions: Put a mark beside the signs/symptoms that you have noted as observed by you or as reported by the child. Add the total score and use the scale below the list to determine relative risk. NOTE: Any child suspected of reading and/or learning difficulties should be referred to developmental vision assessment.

- Skip words while reading or copying (3)
- Loses place while reading or copying (3)
- Skip lines while reading or copying (3)
- Substitute words while reading or copying (3)
- Reread words or lines (3)
- Reverse letters, numbers or words (3)
- Use a finger or marker to keep place while reading and/or writing (3)
- Read very slowly (3)
- Poor reading comprehension (unless read to) (3)
- Difficulty remembering what has been read (3)
- Holds head too close when reading and/or writing (3)
- Squint, close, or cover one eye while reading (3)
- Unusual posture/head tilt when reading and/or writing (3)
- Headaches, generally (2)
- Headaches, especially following intense reading/computer work (3)
- Eyes hurt or feel tired after close work (3)
- Feel unusually tired after completing a visual task (3)
- Double vision (3)
- Eyesight blurs at distance when looking up from near work (3)
- Print seems to move or go in and out of focus (3)
- Letters and/or lines “run together” or words “jump” when reading (3)
- Crooked and/or poorly spaced handwriting (2)
- Misalign letters and/or numbers (2)
- Make errors when copying (2)
- Poor spelling skills (2)
- Difficulty tracking moving objects (2)
- Poor concentration abilities (2)
- Clumsiness (2)
- Difficulty with sports requiring good eye-hand coordination (2)
- Feel sleepy when reading (2)
- Dislike tasks requiring sustained concentration (2)
- Avoid near tasks such as reading (2)
- Intolerance to reading (2)
- Confuse right and left directions (2)
- Restlessness when working at a desk (2)
- Lose awareness of surroundings when concentrating (2)
- Must “feel” things to see them (2)
- Motion and/or car sickness (1)
- Unusual blinking (1)
- Unusual eye rubbing (1)
- Dry eyes (1)
- Watery eyes (1)
- Red eyes (1)
- Light sensitivity (1)

Scoring criteria:

- 10-15 points = Possible functional vision problems
- 16-30 points = Probable functional vision problems
- Over 25 points = Definite functional vision problems

**Please feel free to share this checklist. For more information: Email: [info@dvvc.ca](mailto:info@dvvc.ca) Web: [LearningManagement.ca](http://LearningManagement.ca) Ph: 587-777-2020.**