

How Vision Affects Learning

How the brain and eyes work together – vision – has a great impact on the learning process for both children and adults.

Imagine sitting in a classroom taking notes and fighting a focusing problem that won't allow you to change your focus from near to far and back again quickly enough to keep up with the instructor.

Each week, we will look at an area to look at, practically with groups of pupils undertaking different practical's on our course.

Week 1: Why Vision Learning?

Eye Movement Skills

Studies show that children who have problems with reading, spelling, writing, math, and/or many social skills are often deficient in the execution of many types of eye movements.

- They do not work both eyes well together as a team (binocularity)
- They move their eyes asymmetrically when trying to converge (point the eyes closer)
- They diverge (point the eyes further away) their eyes
- They have difficulty keeping a target clear where they are looking (focusing and accommodation)
- They make errors when trying to fixate or track a moving object (saccades and pursuits)

These poor eye movement skills play a large role in understanding the problems that children encounter when attempting to perform school work and other visual tasks. They have caused their vision to perform inaccurately, to be much less useful for them than for other individuals, and to cause a variety of visual perceptual problems.

Week 2: Visual Learning Process

Visual learning is an extension of behavioral optometry into the field of education. The philosophy of compensatory education has been to teach to the learning style of the under-achieving student. Visual learning seeks to change the student's learning style to that of students that are succeeding. Most unsuccessful students fail due to deflected learning styles rather than lack of intellectual potential.

Visual learning is unique from all other learning programs in that its emphasis is on visual cognitive function. The second and third phases of the program involve visual thinking skills and cognitive retraining. Bringing imagery into a dominant position is the foundation to success with social skills, reading, math, spoken and written language, and sophisticated memory. In short, visual learning not only improves the way individuals function in academics – it improves how they function in all of life.

Week 3: Reading

Individuals that are functioning using these deflected patterns have such difficulty recognizing words that reading is not enjoyable. They spend so much attention attempting to decipher words that they only visually recognize a few. They soon decide that reading is just a complicated task of word decoding, which is not what successful readers do.

In order to solve reading problems, the root visual problems must be solved. MVTC uses a combination of behavioral optometric vision therapy and visual learning (VL). Vision therapy corrects the poor eye movements skills as well as beginning work on visual imagery and visual dominance. VL completes the establishment of good visualization and visual dominance and then teaches the individual how to learn visually.

This process retrains how the individual distributes their attention when confronted with written text. Because an error in normal individual visual development caused these problems, the normal developmental sequence of visual development is followed. The illustration above shows the normal progression of visual cognitive skills from object to picture to symbol to word, and this is the same progression used at MVTC. When the individual has established good eye movement skills and visualization abilities, reading is reintroduced using the new and more efficient visual approach.

Week 4: Spelling

Treatment of spelling problems begins with the treatment of the underlying functional visual problems. Once the individual has acquired good eye movement and visualization skills, the concept of recognizing “the look of words” rather than sounding them out can be introduced. The success of visual recognition is extremely important when working with all aspects of written language including spelling, reading, and handwriting. Visual recognition of words is the key skill that separates successful students from unsuccessful students. As with reading, it is important to follow the normal developmental sequence of visual cognitive skills as illustrated below.

Week 5: Handwriting and Hyperactivity, Impulsivity, and Disorganization

Many children who are too visually active rely too much on touch as their main means of gathering information from their surroundings. In normal development, “visual touch” eventually replaces actual touch when the child is exploring their world. When good eye movement skills are present, visual perception matches tactile (touch) perception so vision can be substituted for touch experiences.

Visual imagery is first related to language when children begin to convert what they have been told into picture or images in their mind (receptive language). After this, they are able to develop the ability to use spoken language to describe images held in their minds (expressive language). Reading is the ability to create images in your mind from written words, and writing is the ability to produce written words to describe images that you have created in your mind, so these two tasks are very closely related.

Good eye movement skills are necessary for good visualization and visual dominance. Individuals who do not have these abilities but are asked to write often learn to use auditory skills rather than visual skills when writing.

Week 6: Receptive and Expressive Language and Maths

Mathematics is a system of quantifying time and space. As language allows the transfer of imagery of events from one mind to the next, mathematics allows for quantifiable description of images of objects in space and time. So math is dependent on the individual’s ability to image objects in space and time. Plane geometry is the measure of space in two dimensions (circles, squares, triangles, etc.). Euclidian geometry is the measure of space in three dimensions

(spheres, cubes, pyramids, etc.). Algebra is a measurement system that allows the fourth dimension of time to be described as objects move through space over time.

Imagery is the thinking tool that humans use to remember past events and to predict future events, and math allows for the quantification of those images which makes predictive imagery more accurate. In order to master mathematics, an individual must be able to use visual thinking and produce good imagery. When an individual experiences delays in visual motor and visual thinking development, they are unable to understand math's relationship to space and time.

Many children with poor eye movement skills and lack of visual dominance have trouble with complicated verbal instructions and express themselves poorly verbally, and they are often diagnosed with receptive and/or expressive language problems. Poorly developed visual thinking skills are often the cause of these language problems. These children attempt to remember spoken words in sequence rather than the more efficient visual thinking process of converting what they hear into imagery so that they can store the information and retrieve it when they need it. As with all of the other problems discussed in this report, this problem is caused by a deflected thinking pattern which is illustrated in the figures below.