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Vision and Learning

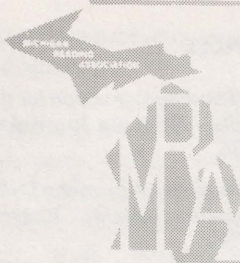
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VISION AND LEARNING

Dr. M.L. Dubin

"This fault in us I find, the error of our eye directs our mind." With these words William Shakespeare in 1601 revealed to the modern world an early awareness of what we know today as visual perception. He made the observation of how we see affects how we think. But it remained for Dr. Arnold Gesell to emerge as the father of perception. In his early work in the 1940's at the Yale Clinic of Child Development he studied in depth the developmental levels the normal infant must pass through. His original research culminated in the publication in 1949 of **Vision-Its Development In the Infant and Child**. One of his most important conclusions was that vision is the dominant process in development; a conclusion that laid the ground work for developmental optometry.

Out of this monumental contribution came the work of Kephart, a psychologist; Getman, an optometrist; Harmon, an educator and many others. Each discipline looked to its own area for answers. Many research studies were launched followed by massive sifting and sorting of data. The most important concept to emerge from the many conflicting philosophies is that if we are going to create an academic environment in which

a high percentage of our youth enjoy the "sweet smell of success," we must adopt a multi-discipline approach. The fields of Psychology, Optometry, Speech and Hearing, Medicine and Education must open their communication channels and become directly involved with the child whose academic skills are in jeopardy. It is my purpose to discuss how the **process** of vision affects learning abilities.

Sight versus vision - the difference is profound and must be clearly understood. Sight is the ability of the eye to resolve detail - it is purely sensory - nothing more. A high percentage of children who find it difficult to comprehend their academic world have 20/20 eyesight in the presence of no refractive error; i.e., no nearsightedness, farsightedness or astigmatism. Sight is the triggering mechanism that sets the process of vision in motion. Sight is largely innate. Vision on the other hand is a **LEARNED** process involving input (sensory), comprehension (perceptual) and output (motor). Any deficiency in any area of this chain can have a profound effect upon a child's ability to gain meaning from the printed symbol. The skilled developmental optometrist must assess this process in total and when deficiencies are manifested through examination, they must prescribe remediation therapies in the form of visual and perceptual motor training programs. Part of the total therapy may be the prescription of a pair of glasses for reading.

If the process of vision is to be efficient, it must be effortless. If a child has to put forth effort for the process of vision to function, it will usually be at the expense of reading fluency or comprehension. The two primary skills involved are eye coordination and eye



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focus. The most common and yet most often overlooked problem by eye care professionals is the child's inability to maintain his eyes in focus over extended periods of time **WITH EASE**. A pair of glasses prescribed to relax the stress on the focusing mechanism can have an immediate effect on reading fluency, and the ability to attend to the task. Another benefit that often accrues to the child whose focusing ability has been relaxed is improved handwriting. The other primary skill, eye coordination, is equally important in reading fluency. If the child cannot easily converge his eye upon the line of print or if the eye muscles exert a pull against each other making it difficult to keep both eyes on the task, the eyes will usually leave the task and attention will drift to any distracting influence and the child is off day-dreaming.

Many other visually related skills impact upon a child's academic abilities. Some of these skills may not appear to be visual, but they have their roots in the dominant process that Dr. Gesell called vision also known as the steering mechanism of development. Directional orientation, the internal awareness of right, left, up, down, over and under is such a skill. The most common directionality problem manifested in children, who are beyond the first grade and subject to reversals, is the comprehension of right and left. Care must be taken to establish **INTERNAL** awareness of right and left and totally eliminating external clues such as placing an R on the right hand. The child's dependency on external clues to directional orientation may well persist into adult life. It is not uncommon for adults to decide which is their left hand only after they look at a ring or watch which they know they wear on their left hand.

The ability to perceive and reproduce basic form (form perception) is directly related to letter recognition and is a trained skill controlled by the process of vision. Another learned skill dominated by the visual process and related to the development of math concepts is spatial relations.

At the top of the developmental ladder is the skill of visualization - the ability to project a mental picture in our mind of what we see, hear and think with sufficient clarity to allow us to manipulate that image in our mind with

a goal of problem solving. Visualization is the gateway to abstract thinking. It is trainable and is unique to the human species. There are three facets of visualization. They are visual recognition requiring current input, visual recall requiring the ability to conjure up an image of the past and visual space imagery, the ability to manipulate the recalled image. This is known as high level visual thinking.

It cannot be emphasized enough that imagery effectively used is a goal much to be desired. The good imager not only has the potential to be more inventive and creative in all his actions, he can even be free and flexible in a structured environment. When limited or burdened by any circumstance, he has the tool of "liberation" at hand.

If you want to develop your children's ability to think -- try first developing their ability to visualize.



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