

Enhancement of Vision for Online Learning

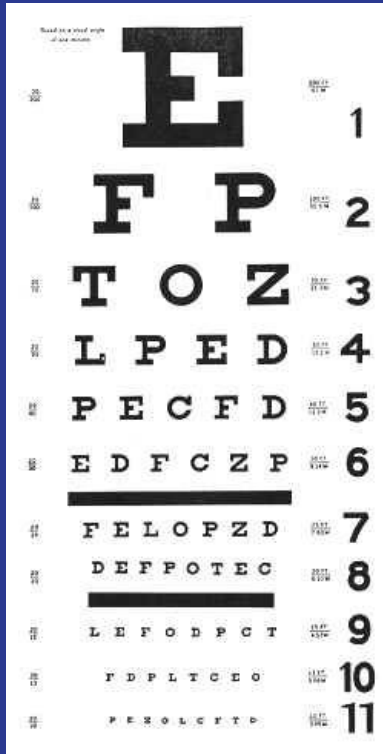
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What is perfect eyesight?



“Perfect Eyesight”



20/20 Visual Acuity

- Measures the ability to see clearly at a testing distance of 20 feet
- It is helpful to know if a child is able to see the blackboard clearly
- Does not tell us if the visual system is equipped for online learning

“Eyesight” vs. “Vision”

- Vision is the interplay between the eyes and the brain
- Visual skills are learned throughout development
- IMPORTANT
 - To interpret what is seen accurately and clearly, your eyes must work efficiently together and your brain must meaningfully perceive the visual information

Eye Teaming (Convergence)

The consumption of soft drinks by American youth is increasing. National dietary surveys show that carbonated soft drink consumption more than doubled in youths aged 6 to 17 from about 5 ounces per day in 1977-78 to 12 ounces in 1994-98, the most recent years for which national data is available. Adolescent boys' soft drink consumption more than tripled during those years.

There are at least two negative results to this soft drink explosion. First, the use of soft drinks is likely related to the rise in childhood obesity. A variety of studies suggest that we don't eat fewer calories from other sources when we increase calories from beverages. If a child drinks 9 to 10 ounces of a soft drink, that's equivalent to almost 120 calories.

Convergence
insufficiency
simulation

Eye Focusing (Accommodation)

Failing to clean off your desk before lunch not only raises the risk of salad dressing spilling onto your work, but it could also increase your chances of getting sick. A new report shows that close to half of Americans don't clean their desks before eating at them, and a third don't wash their hands, which may foster the spread of infectious diseases like colds and flu.

Due to a shortage of the flu vaccine this year, health officials have urged the public to take measures to reduce their risk, and researchers say improving at-work hygiene and hand washing habits could have a major impact in reducing sick days. "Desks, phones, door knobs, conference tables, fax machines and other common workplace areas can be breeding grounds for bacteria-spreading germs," says Brian Sansoni, spokesman for the Soap and Detergent Association, in a news release.

Accommodative
insufficiency
simulation

Visual Tracking (Oculomotor Dysfunction)

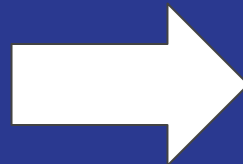
- Skips words and loses place when reading
- Re-read for comprehension
- Lots of small word errors
- Slow reading speed
- Short attention span

Henry looked to the right. He looked to the left. He looked up, and he looked down. Where had Frog gone? Henry did not like being alone in the forest. "Frog, where are you?" Henry called. "Please come back!"

Visual Perceptual Skills

(How the information is used by the brain)

- Laterality/Directionality
- Visual Motor Integration
- Visual Memory
- Visual Imagery
- Spatial Relations
- Visual Discrimination
- Form Constancy
- Figure Ground
- Visual Closure



Why is online learning more visually demanding?

- Shorter working distance
- Worse stimulus for eye focusing and convergence
- Direct light vs. reflected light
- Glare and eye strain
- Lack of tactile feedback and hand-eye coordination
- Reduced retention vs. print sources
- Exposure to blue light and disruption of circadian rhythm
- Reduced blink rate and dry eye syndrome
- Myopia development

Visual Demands >> Visual Abilities

- Visual problems occurs when the visual demand exceeds an individual's visual abilities to comfortably and efficiently perform the required task.
- Most at risk when spending 2 or more continuous hours using a digital device.

Common Visual Symptoms of Online Learning

- Headaches
- Screen blurs in or out of focus
- Double vision
- Loss of place
- Eye strain
- Dry eye
- Reduced concentration
- Avoidance
- Closing/covering an eye
- Poor posture
- Neck/shoulder pain

THESE TYPES OF PROBLEMS CAN BE IMPROVED
THROUGH VISION TRAINING AND
ENHANCEMENT

Visual Enhancement for the Online Classroom

- In-office based vision therapy with home-based reinforcement therapy is standard of care
- Vision Therapy: trains the brain to give correct instructions to the muscles of the eyes and to interpret visual information faster and more accurately
 - Remember vision is learned
 - Not strengthening eye muscles
 - Remember it takes coordination of multiple areas in the brain to create clear and single vision

How do we help?

- Vision therapy:
 - Enhance stability of visual input
 - Enhance binocular/accommodative/oculomotor control and stamina
 - Develop speed of visual information processing and stability of output
- How is this achieved?
 - Repetition
 - Feedback
 - Coordination of motor response with sensory input
 - Multisensory integration

Vision Therapy

- Examples of Training:
 - Polaroid Glasses = separates the sight in two eyes so the brain cannot rely on one eye alone
 - Prism = stimulates the ability for the eyes to move in and out together
 - Lenses: = stimulates and relaxes the focusing system.



How can you help?

Physical Signs or Symptoms

- Frequent headaches or eyestrain
- Intermittent blurring of vision
- Avoidance of close work
- Poor judgment of depth
- Turning of an eye (in, out, up, down)
- Tendency to cover or close an eye
- Double vision
- Poor hand-eye coordination
- Difficulty following a moving target
- Dizziness or motion sickness

Performance problems

- Poor reading comprehension
- Difficulty copying from one place to another
- Loss of place, repetition, and/or omission of words while reading
- Difficulty changing focus from distance to near
- Poor posture when reading or writing
- Poor handwriting
- Can respond orally but can't write the information on paper
- Letter or word reversals
- Difficulty judging sizes and shapes



Thank you!