


# Identifying Children with Low Vision

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## Components of Vision

Vision is the ability to take in, process and understand visual information

- Visual acuity
- Eye movement skills
- Eye teaming, focusing, and depth perception
- Color vision
- Peripheral vision
- Visual perception and processing
  - Recognition, comprehension and retention

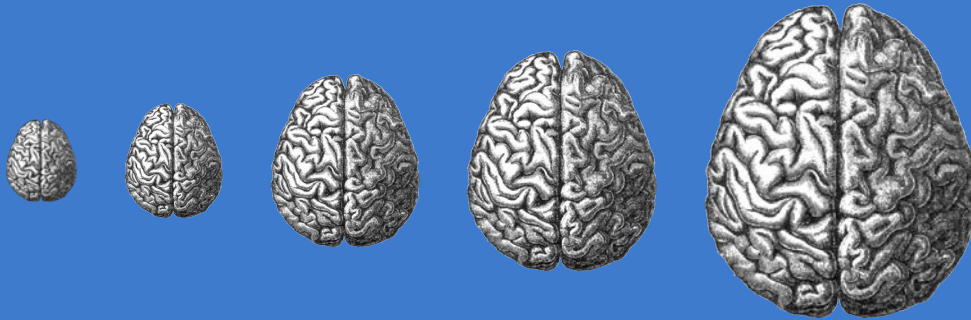
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## Why is Vision Important for Children?

Approximately  
**80%**

of what children learn during the early years of life is acquired through visual processing of information



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## What is "Low Vision"?

"Low vision" is a term used to describe visual impairment that cannot be corrected with glasses, contact lenses, surgery or medicine

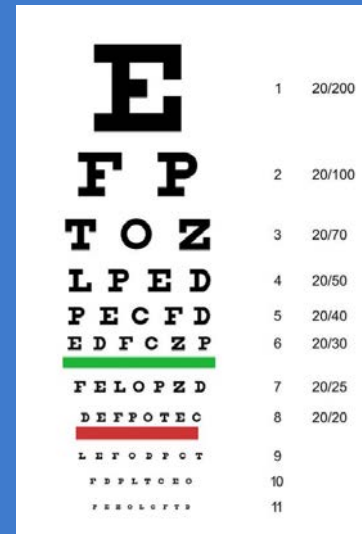


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## Definitions of Low Vision

**Clinical definition:** a person with low vision is one who has impairment of **visual function even after treatment** and/or standard refractive correction and has an acuity of less than 20/70 to light perception or a visual field less than 30 degrees from the point of fixation, but who **uses or is potentially able to use vision for the planning and execution of a task**



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## Definitions of Low Vision

**Functional definition:** a level of vision that **with standard correction hinders an individual in the planning and/or execution of a task**, but which permits enhancement of the functional vision through the use of optical or non-optical devices, environmental modifications and/or techniques



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## What Causes Vision Impairment?

### Inherited or Congenital Eye Disease

- Oculocutaneous albinism
- Optic nerve hypoplasia
- Nystagmus
- Optic atrophy
- Congenital cataracts
- Retinopathy of prematurity
- Retinal dystrophies
  - Retinitis pigmentosa
  - Stargardt's disease
  - Rod cone dystrophy, etc



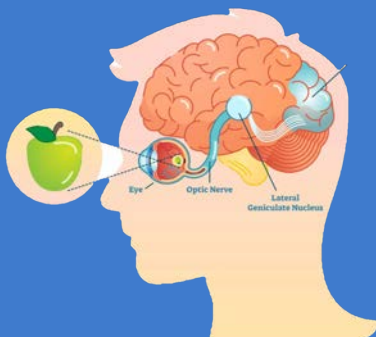
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## What Causes Vision Impairment?

### Acquired Vision Loss

- Traumatic brain injury



### HOW TRAUMATIC BRAIN INJURY (TBI) AFFECTS DAILY LIFE

HEALTHY	TBI
<ul style="list-style-type: none"> <li>● Frontal: Concentration, Problem Solving, Speech</li> <li>● Parietal: Sense of Touch, Pain, Temperature</li> <li>● Occipital: Healthy Vision</li> <li>● Temporal: Memory, Organization</li> <li>● Cerebellum: Balance &amp; Coordination</li> <li>● Brainstem: Breathing, Steady Heart Rate</li> </ul>	<ul style="list-style-type: none"> <li>● Frontal: Lack of Focus, Irritability, Language Difficulty</li> <li>● Parietal: Difficulty with Reading, Spatial Misperception</li> <li>● Occipital: Blind Spots, Blurred Vision</li> <li>● Temporal: Problems with Short- &amp; Long-Term Memory</li> <li>● Cerebellum: Difficulty Walking, Slurred Speech</li> <li>● Brainstem: Changes in Breath, Difficulty Swallowing</li> </ul>

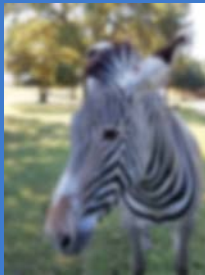
### Neurological Abnormalities of the Visual Pathways and Visual Centers of the Brain

- Cortical Visual Impairment (CVI)

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## How Do These Diseases Impair Vision?



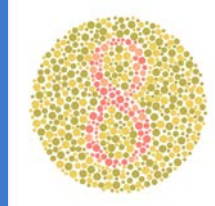
Loss of ability to see detail (visual acuity)



Loss of side or peripheral vision (visual field)



Inability to navigate steps or the edge of curbs (contrast sensitivity)



Inability to distinguish colors

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## Why Refer?

### Annual comprehensive eye examination

- Assessment of eye health
- Glasses prescription



### Low vision examination

- Comprehensive assessment of visual function
- Determining what visual aids can help children best utilize their remaining vision for reading, writing, and even driving.
- We can also review and suggest environmental alterations for the home and classroom to support optimal independence and safety

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## Components of Low Vision Assessment

### Visual Acuity

- Quantification of vision

### Refraction

- Ensure child is in the most appropriate glasses
  - Glasses create an in focus image on the retina, however, in a low vision patient this part of the retina frequently does not function properly



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## Non-optical Devices

### Relative distance magnification: bring the objects closer

- Reading stand
- Move closer
- Reading glasses



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## Non-optical Devices

### Enhance contrast or decrease glare

- Wear hat or visor
- Filters
- Specialty lamps and lighting



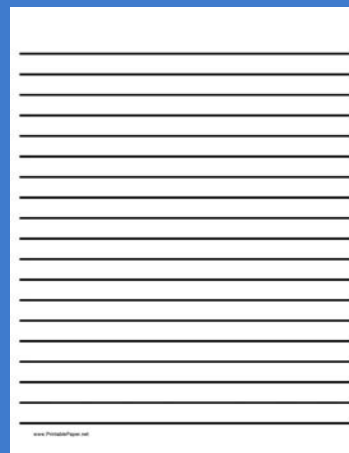
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## Non-optical Devices

### Relative size magnification: make the object larger

- Large print books
- Bold markers
- Dark-lined paper
- Large-print calculator



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## Optical Devices for Near

**Use:** reading, writing, self-help tasks, drawing, etc

### Examples:

- Handheld magnifiers
- Stand magnifiers
- Bar magnifiers
- Illuminated handheld magnifiers



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## Optical Devices for Distance

**Use:** Distances spotting such as reading the board in a classroom, watching a demonstration in class, spotting street signs, viewing sporting events, or watching television

### Examples:

- Handheld monocular telescopes
- Clip-on monocular telescopes
- Spectacle-mounted telescopes



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## High-Tech Assistive Technology

### Electronic Magnification

- Handheld CCTV
- CCTV

### Computer Software

- Screen reading programs: Jaws
- Screen magnification programs: MAGic
- Speech-to-text software: Dragon
- Text-to-speech software: Optical Character Recognition (OCR)



### Phones and Tablets

- Variety of applications to increase accessibility
- Many support groups such as iBug
- Kindle, iPad, iPhone, Apple watch, Android, etc

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## Support and Education

- Providing thorough report of findings for family
- Provide State Eye Report
- Recommendations for modifications for school & home
- Information for local support groups
- Information for local resources and services



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## Connect with Team

- Occupational therapists who specialize in vision rehabilitation
- Orientation and mobility specialists
- Social workers
- Vocational rehabilitation counselors



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## Who to Refer for Low Vision Evaluation?

- Family history of blindness
- Family or personal history of eye disease
- Vision impairment that affects activities of daily living
  - Best corrected vision of 20/60 or worse
  - Peripheral visual field of 30 degrees or less
- Children with known vision impairment that have not had a comprehensive low vision evaluation within the past 1-2 years

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