

# **CHAPTER 12:**

## **Learners with Blindness or Low Vision**

***Exceptional Learners: An Introduction to Special Education***

**Thirteenth Edition**

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# Topics

- Definition and classification
- Prevalence of visual impairments
- Anatomical and physiological characteristics of eye
- Measurement of visual ability
- Causes of visual impairments
- Psychological and behavioral characteristics
- Educational considerations
- Assessment of progress
- Early intervention and transition

# Definition and Classification 1

The majority of people who are blind can actually see.

- Legal definition
  - Legally blind
    - 20/200 or less with correction
    - Field of vision less than 20 degrees
  - Low vision
    - between 20/70 and 20/200 with correction

# Definition and Classification 2

- Educational definition
  - Ability to function using sight available
    - Blind – must learn to read braille
    - Low vision – can read some print, large or magnified

# Prevalence

- 10 times more prevalent in adults
- About .04% of 6 to 21 year olds
- One of the least prevalent disabilities in children

# The Visual Process

**Light rays reflect off object and pass through cornea which bends rays to focus image**



**Rays pass through aqueous humor then the pupil in the iris**

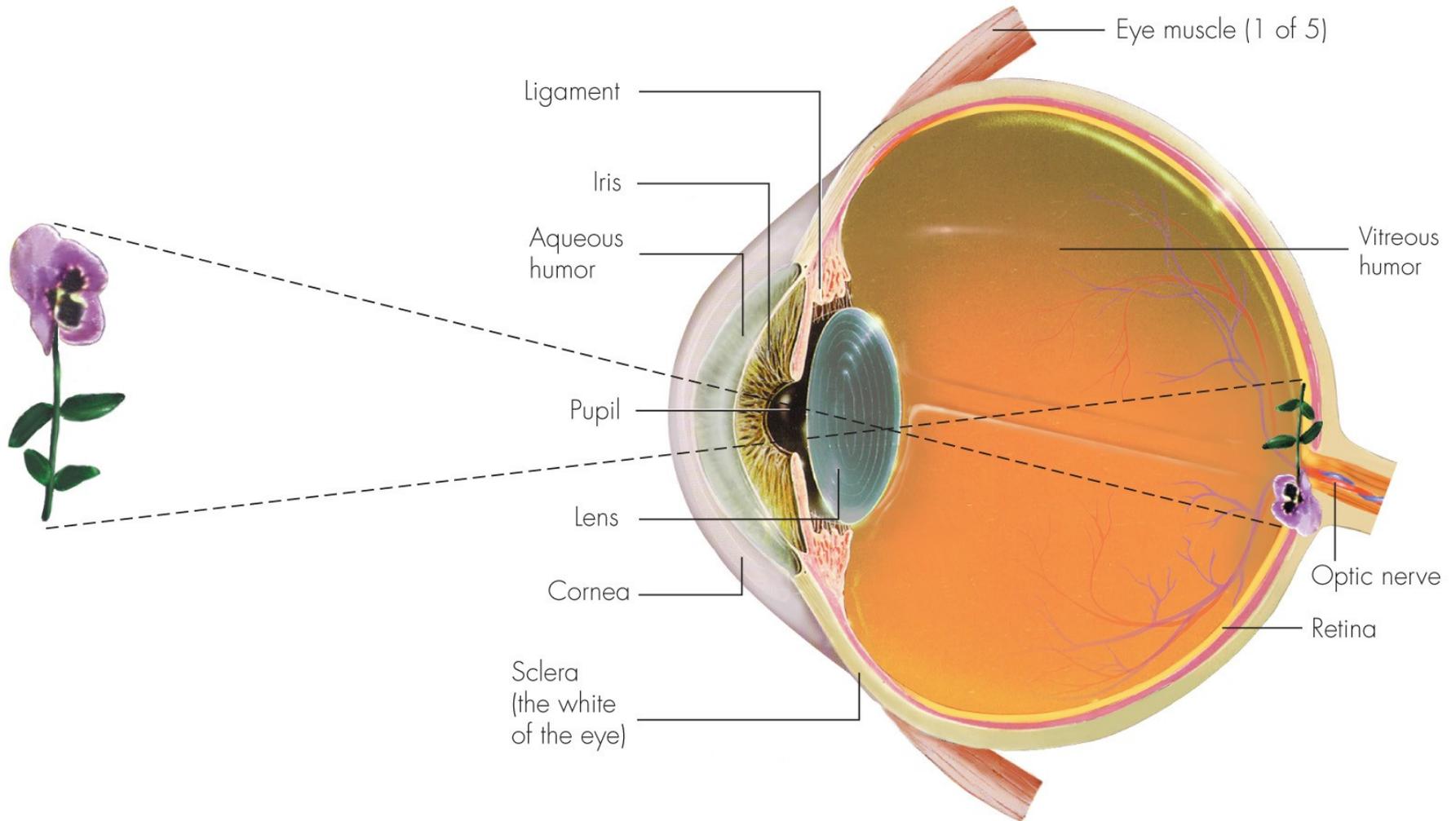


**Pass through lens, which refines focus, then through vitreous humor**



**Focus on the nerve fibers of the retina, channeling along optic nerve to brain**

# The Basic Anatomical Features of the Eye



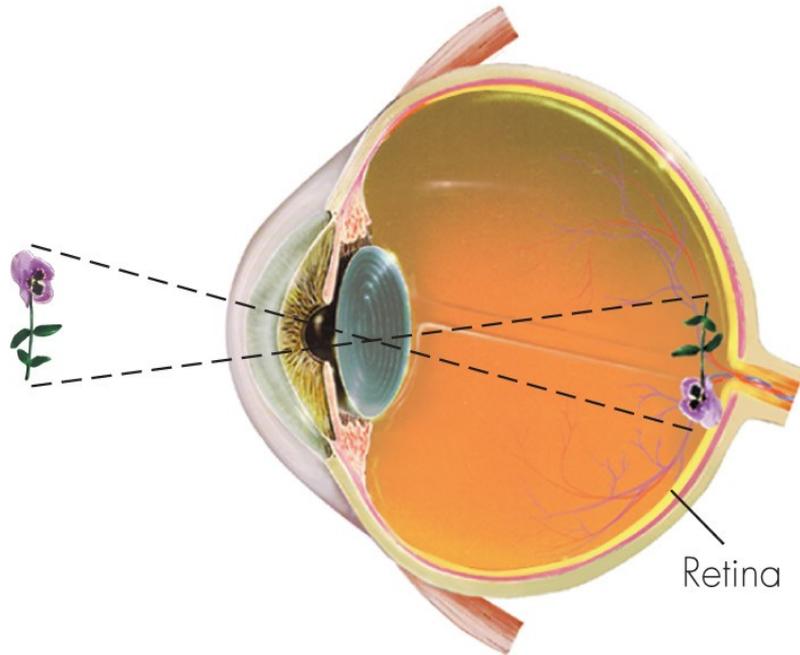
# Identification of Visual Impairment

- Snellen chart
  - Useful screening tool
  - Limitations
    - Does not measure acuity for near objects
    - Visual acuity may not correspond to visual efficiency
    - Acuity may not correspond to use of vision in natural settings
- Functional vision assessment

# Causes Affecting Children and Adults

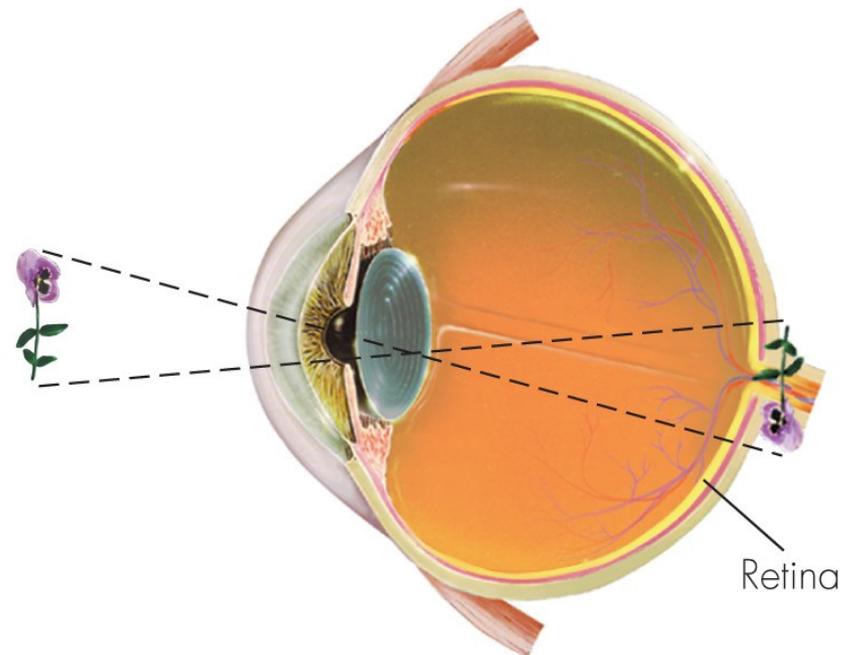
- Refraction errors
  - Myopia
  - Hyperopia
  - Astigmatism
- Disease or damage
  - Glaucoma
  - Cataracts
  - Diabetic retinopathy

## (a) Myopia



(a)

## (b) Hyperopia



(b)

# Causes Primarily Affecting Children 1

- Cortical visual impairment (CVI)
  - Damage to parts of the brain
  - The leading cause of blindness in children
- Retinopathy of prematurity (ROP)
  - Abnormal growth of blood vessel in eye
  - Monitor oxygen given to premature babies

## Optic nerve hypoplasia (ONH)

- Underdevelopment of the optic nerve
- Usually accompanied by other disorders

# Causes Primarily Affecting Children 1

- Hereditary
  - Retinitis pigmentosa
    - Tunnel vision
    - Night blindness
- Improper muscle functioning
  - Strabismus
    - One or both eyes directed inward, Brain will reject signals from deviating eye(s)
  - Nystagmus
    - Rapid, involuntary eye movement

# Psychological and Behavioral Characteristics 1

- Little affect on language development
- Intellectual ability
  - Performance on standardized intelligence tests: no reason to believe any difference
  - Conceptual abilities: incidental learning
- Functional skills
- Orientation and mobility (O&M)
  - Cognitive mapping
  - Obstacle sense and echolocation

# Psychological and Behavioral Characteristics 2

- Academic achievement
  - When behind, may not be due to blindness
  - Phonological awareness is as important in braille as print
- Social adjustment
  - Subtle visual cues
  - Society's discomfort with blindness
  - Stereotypic behaviors

# Educational Considerations 1

- Braille
  - Codes: literary braille, Nemeth Code, Unified English Braille
  - Tools: Perkins Brailier, slate and stylus
  - Braille bills
    - Braille instruction must be available
    - Teachers need to be proficient in braille
- Use of remaining sight
  - Large-print books
  - Magnifying devices
- Listening skills

# Educational Considerations 2

- Orientation and mobility training
  - The long cane
  - Guide dogs
  - Tactile maps
  - Human guides
  
- Technological aids
  - Communication and information access
    - Screen readers, portable braille notetakers, Newsline, Descriptive Video Service
  - Orientation and mobility (e.g., GPS)
  - Artificial Vision
  - Cautions about technology

# Service Delivery Models

- Residential school
- Special class
- Resource room
- General class with itinerant teacher services: most popular

# Assessment of Progress

- Assessment of academic skills
  - CBM for braille skills and mathematics
- Assessment of functional skills
  - Especially orientation and mobility
- Testing accommodations
  - Presentation accommodations (braille materials, large print)
  - Scheduling (slower reading rate)

# Early Intervention

- Orientation and mobility training
- Facilitate interactions with sighted children
- Parent involvement
- Parental support

# Transition to Adulthood

- Independent living
  - Access to services
    - Accessible pedestrian signals
    - Raised dome detectable warnings
  - Paternalistic attitudes
- Employment
  - Underemployed and over-qualified
  - Job accommodations