# Lesson Ideas: Grades 6 through 8

Grades 6-8

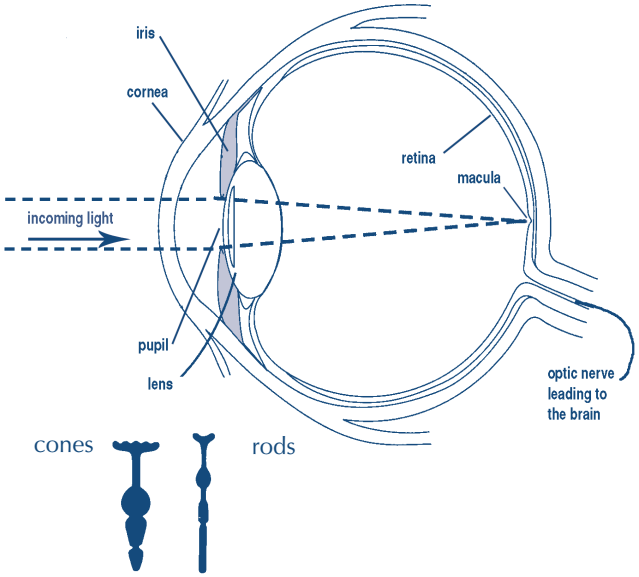
Implement any of the following lesson ideas to teach your students about the eyes, visual system, eye health and safety. Each lesson idea can be completed as an independent learning activity or incorporated into your existing curriculum.

Masters for photocopying a variety of fun Vision Quest materials to help students learn are included in this kit.

## Lesson #1: Parts of the eye and workings of the visual system

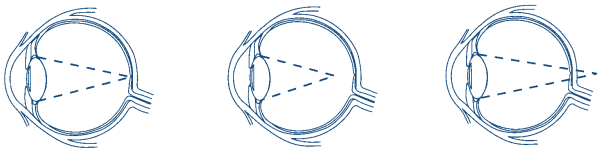
Suggested Vision Quest materials: "Schematic of the Eye and Visual System" activity sheet and "Basic Eye Anatomy Quiz."

Help students improve their note-taking abilities while studying the workings of the eyes and visual system by giving each a "Schematic of the Eye and Visual System" activity sheet (copy master included in this kit) to complete while you lecture or show the video, "A Journey Through Your Eyes" (available on loan from the South Dakota Optometric Society by calling 605-224-8199).




Key lecture points include:

- Vision requires three things: (1) **light** to see objects, (2) **eyes** to absorb light reflected from objects we see, and (3) a **brain** to interpret these light signals and perceive an image in our minds.
- Vision begins when light rays enter the eye through the **cornea**, the transparent front surface of the eyeball.
- The cornea bends (or **refracts**) the light rays so they can pass through the **pupil**, the small black hole in the center of the colored part of the eye.
- The amount of light passing through the pupil is controlled, in part, by the muscles in the **iris**, the colored part of the eye, that can tighten or relax to make the pupil smaller or larger.
- The rays flow through the pupil then pass through the eye's lens which is very similar to a lens on a camera. The lens further bends (or refracts) the light rays so that they focus on the **retina,** the nerve-rich lining at the back of the eye.
- Good **visual acuity** (visual sharpness) occurs when the eye's lens focuses light rays precisely on the retina. In some people, the lens of the eye may focus the light rays at a point in front of the retina. This is called **myopia** (or nearsightedness) and makes close objects easier to see clearly than those at a distance.



**Good visual acuity** | **Myopia** | **Hyperopia**

- In some people, the lens of the eye may focus the light rays at a point behind the retina. This is called **hyperopia** (or farsightedness) and makes distant objects easier to

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see clearly than those nearer to the eyes. Myopia, hyperopia and many other visual conditions can be corrected with **prescription eyeglasses** or **contact lenses**.

- When light rays hit the retina, they stimulate millions of light-sensitive nerve cells that create electrical impulses. Some of these cells are cone-shaped and concentrated in the **macula**, the center of the retina. Others are rod-shaped and located outside the macula.
- **Cones** create impulses that allow the brain to perceive clear, sharp central vision and an awareness of color and fine detail. **Rods** transmit signals for peripheral (side) vision and allow the eyes to detect motion and see in dim light.
- Impulses from both cones and rods are sent to the brain via the **optic nerve**. The **brain** interprets these impulses allowing a picture to form in the mind.
- It is a good idea to visit your doctor of optometry for an **eye examination** once a year to make sure your eyes are healthy and working properly.

A copy master for a "Basic Eye Anatomy Quiz" covering this lesson is included in this kit. **Quiz answers: 1-F (change hyperopia to brain), 2-T, 3-T, 4-F (change cornea to retina), 5-F (change rods to cones), 6-T, 7-F (change blocked to bent), 8-T, 9-F (change hyperopia to myopia or nearsightedness),10-T.**

## Lesson #2: Oral presentations on visual conditions and eye diseases

Suggested Vision Quest materials: "Vision and Eye Health Presentation Worksheet."

Begin the lesson by discussing the difference between a visual screening and an eye examination. Include these key points:

- A visual screening is a quick test to see how well a person can read letters or symbols at a distance. Visual screenings are often given in schools and to drivers at the motor vehicle department. These screenings help detect obvious visual problems, but they cannot identify complex visual conditions or underlying health problems.
- For that reason, a comprehensive eye examination (which includes a thorough examination of the internal and external structures of the eye and a series of sophisticated tests) performed at the office of an eye care professional is the best way to diagnose visual conditions and eye health problems and ensure they are treated promptly.
- Eye care professionals include doctors of optometry (O.D.s) who diagnose and treat eye health and visual conditions and prescribe medications, contact lenses, eyeglasses and other therapies. They also include ophthalmologists (M.D.s) who specialize in performing eye surgery. Visual screenings are often performed by school nurses and others who make referrals to eye care professionals.
- Because the eyes are constantly growing and changing, doctors of optometry recommend that you obtain a comprehensive eye examination every year.

Encourage students to build their public speaking skills while becoming more aware of conditions that can affect their vision and eye health. Distribute copies of the "Vision and Eye Health Presentation Worksheet" (copy master found in this kit) and review basic elements of an oral presentation including:

- A short **introduction** that gets the attention of the audience and introduces the topic;
- A **statement of credibility** that describes how the student gathered his or her information and the resources that were used;
- The **body** of the speech which presents three to five main points about the topic (such as a definition of the disease or condition, its prevalence, symptoms, how it can be diagnosed by eye care professionals and treatment options);
- A **visual aid** (such as computer-generated slide presentation, chart, poster, diagram or model) to help illustrate key points; and

- A **conclusion** which wraps up the main points and presents any recommendations for avoiding the condition or obtaining an early diagnosis.

Assign a topic from the following list to each student and ask him or her to research it (at the library or on the Web) and prepare a three-minute speech (including a visual aid) to be presented to classmates. (An excellent information resource for vision and eye health topics is the Web site of the American Optometric Association at http://www.aoa.org.)

Suggested topics include:

- **Myopia** (nearsightedness)
- **Hyperopia** (farsightedness)
- **Astigmatism**
- **Presbyopia**
- **Strabismus** (crossed eyes)
- **Amblyopia** (lazy eye)
- **Color deficiency** (color blindness)
- **Conjunctivitis** (pink eye)
- **Sties**
- **Cataracts**
- **Glaucoma**
- **Diabetic retinopathy**
- **Hypertensive retinopathy**
- **Retinitis pigmentosa**
- **Macular degeneration**
- **Vitamin A and other nutritional deficiencies**
- **UV radiation and the eyes** (and the importance of wearing UV protective sunglasses)
- **Impact of alcohol consumption on vision**
- **Computer vision syndrome** (eye fatigue caused by computer use)
- **Trauma: blows to the eye** (black eye)
- **Trauma: lacerations of the eye**
- **Impact of allergies on the eyes**
- **Blindness** (common causes, treatment, prevention)

Encourage students to ask questions and share information after each presentation.

## Lesson #3: Publishing *The Eye Health Tribune*

Suggested Vision Quest materials: (All program materials can be used as informational resources.)

Teach students about eye safety and visual care while introducing them to journalism basics by publishing a newsletter called The Eye Health Tribune (or another name chosen by your class).

Discuss your newsletter's mission (to inform readers about the importance of maintaining the health of their eyes and visual system) and target audiences (students, their parents and teachers).

As a group, brainstorm a list of eye and vision-related articles, and assign them to student reporters and editors who will research, write and edit them. Excellent sources of information include materials in this kit, your school library, your local doctor of optometry and the Internet (including the American Optometric Association's Web site (http//www.aoa.org).

Some possibilities include:

- A story about the importance of caring for the health and safety of the eyes including a sidebar column of "person-on-the-street" interviews posing a question (such as, "What is your favorite way to use your eyes?") to random students and teachers at your school;
- A list of common visual conditions and eye diseases, their symptoms and treatments (see Lesson #2 for topics);
- An "Ask-the-Optometrist" column of questions submitted by several students and answered by a local optometrist;
- A list of interesting facts and statistics about the eyes and vision;
- A story about a teacher who wears eyeglasses or contact lenses and the difference they have made in his or her life;
- A chart showing a recommended schedule for obtaining eye examinations at different ages;
- A description of the main parts of an eye examination and the differences between an eye examination and a visual screening;

- A story about how the eyes and visual system work (with a simple diagram);
- An article about the importance of wearing eyeglasses with ultraviolet protection (and a photo showing several students modeling their sunglasses);
- A story about how animal or insect eyes (e.g., cats, birds, houseflies) differ from human eyes;
- An interview with your school nurse about how to remove dust and dirt safely from the eyes;
- An interview with your physical education teacher or coach about sports eyewear and headgear that can protect the eyes and head from injury;
- A list of the pros and cons of wearing contact lenses including an interview with a contact lens wearer;
- A description of common instruments found at the eye doctor's office and their purposes (e.g., a phoropter, ophthalmoscope, slit lamp and fundus camera);
- A story about how one would go about becoming a doctor of optometry or a paraoptometric assistant;
- A short biography about a person who has contributed to the visual welfare of others (e.g., Benjamin Franklin, inventor of bifocals) or who has raised public awareness about visual disabilities (e.g., Helen Keller);
- A list of famous people who wear eyeglasses;
- A column of eye health and safety DOs and DON'Ts; and
- A story about nutrients that are essential to the visual system (such as vitamin A) and recipes featuring foods high in these nutrients.

Be sure to introduce students to some basic journalism terminology along the way including:

- **flag** (name of your newsletter in type as it appears across the top of the first page),
- **masthead** (a small box, often appearing on the second page, that contains information about the newsletter's name, place of publication and editors),
- **headline** (title in large type used to announce each story),
- **by-line** (credit given to the author under the headline),
- **lead** (first sentence of a story containing the most essential information),
- **pics** (photos and illustrations),
- **captions** (wording that appears under pics describing how they relate to stories),
- **sidebar** (a smaller story with supporting information which appears next to a related larger story),
- **cub** (a novice reporter),
- **assignment** (a specific story or job given to a reporter),
- **deadline** (the last opportunity to finish a story), and
- **dummy** (a diagram showing the basic layout planned for the newsletter).

As a team, work on the final layout and the duplication of your newsletter and distribute it to other students in your school encouraging them to share it with their parents (or consider enclosing it in a routine school mailing to parents).

## Lesson #4: Vision and sports performance

Recommended Vision Quest materials: "Sports Vision Performance" activity sheet.

Ask students what sports they play and make a list of the most popular ones. Discuss how athletes use their eyes when playing these sports noting all that they must watch and consider during the game or event.

Emphasize that, in addition to doing exercises to increase their speed, muscle strength and manual dexterity, athletes can improve their performance by engaging in activities that enhance their visual abilities. Invite students to create a "sports vision clinic" with stations were they can try out some of these activities.

Prepare by distributing photocopies of the "Sports Vision Performance" activity sheet and assigning groups of students to bring in the necessary items to recreate activities for improving eye-hand coordination, visual concentration, eye tracking and depth perception. On the day of the clinic, have the students take turns manning these stations and participating in each event. Encourage students to recreate and practice the activities they find most helpful on a daily basis for one week.

You might also want to include a safety station where a physical education instructor or coach can show students different types of sporting equipment that protect the eyes and head (such as masks, helmets and goggles) and the proper way to wear them.

As a follow-up assignment, ask students to write a short paper about sports vision describing:

- how they use their vision in their favorite sport and the visual skills they'd like to improve,
- how they can protect their eyes when participating in the sport, and
- one or two of the techniques for enhancing visual performance and how they recreated and practiced these techniques.

## Lesson #5: Optometry as a career (guest speaker or field trip)

Explore the eye care professions with your students by inviting a doctor of optometry to speak in your classroom or by arranging a field trip to the doctor's office. (You can get referrals for optometrists in your area who enjoy speaking to students by calling the South Dakota Optometric Society at 605-224-8199).

Work with your students, in advance, to prepare a list of questions for the optometrist such as:

- Why did you want to be a doctor of optometry?
- What is your job like on a day to day basis?
- What kinds of eye and visual problems do you see in your practice and how do you treat them?
- What are some of the elements of an eye exam and why are they important?
- How is an eye exam different from a visual screening?
- What kind of education is required to be a doctor of optometry?
- How does being an optometrist differ from being an ophthalmologist or an optician?
- What is a paraoptometric? What do they do and what kind of education is required?
- In what settings do doctors of optometry work (e.g., private practice, hospitals,

research, the military, and public health service)?

- Are there optometric practices that have a particular focus (e.g., sports vision, low vision, visual therapy) and what services do they offer?
- What is the best thing about being a doctor of optometry?
- How can a person my age best prepare for a career in eye care?

Follow up the visit by dividing students into teams and asking them to collect information on optometry as a career from any of the following sources:

- your school's guidance office,
- school library,
- public library,
- Internet,
- guidance/academic advising offices of colleges and universities in your area,
- schools and colleges of optometry,
- the South Dakota Optometric Society,
- the American Optometric Association, and
- doctors of optometry (and their staffs) in private practices, hospitals, the military and public health service.

Create a collage on "Eye Care as a Career" and post some of the findings on a bulletin board in your school's library or cafeteria.

**Let us help!**

The South Dakota Optometric Society offers a video lending library, assistance locating speakers, traveling exhibits and photocopying assistance (where available). Contact the society at 605-224-8199 or www.sdeyes.org for more information.

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