



Vision UnLocked!

Engage • Educate • Empower



A STEM Curriculum for Students: Grades 6-8: Teacher Copy



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Introduction

Vision UnLocked immerses middle schoolers in STEM modules designed to introduce students to the relevance and importance of vision health. Centered around a locker-themed scavenger hunt, students will find clues to complete their journey toward understanding their eyes. Topics include:

- How vision develops throughout childhood
- Common eye and vision issues
- Preventative measures students can take to keep their eyes healthy

Vision UnLocked can supplement the current STEM curriculum, provide teachers with activities to help prepare students for in-school vision screenings, and energize excitement about the wonders of vision.

Why is this curriculum important?

According to the International Agency for the Prevention of Blindness, uncorrected vision is the largest unaddressed disability in the world today. More than one billion people experience vision loss of which 90% is treatable. Children with vision loss are 2.5 times less likely to be enrolled in formal education. The leading cause of vision loss is uncorrected refractive errors and cataracts. More than 671 million people have poor vision, and guess what? This problem could be remedied with a 700 year-old solution – glasses!

For students, poor vision affects their ability to see the white board, read, or play sports. All of these activities play a critical component in forming social connections. If a child receives glasses, studies show the odds of failing a class decrease by 44%.

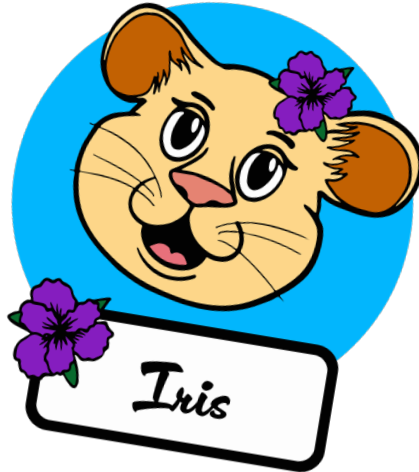
Lions World Vision Institute works throughout the greater Tampa Bay area providing pediatric eye care. This includes everything from vision screenings to exams, and much more. We prioritize outreach to communities with limited-to-no-access to eye care. As part of our outreach, we have created a fun, engaging STEM-based curriculum, which we hope you will use in your classroom. We've made it easy to use, so an educator or a parent teaching from home can jump right in and use these lessons.

Meet Lens, Iris, & Friends

Lens and Iris are siblings. They have a spirit for adventure and love to “see things,” “find things,” and “watch” things. Ever since Lens got his glasses when they were kids, they’ve been fascinated with their eyes!

Now that they’re in middle school, Lens and Iris are in Mrs. Obscura’s science class with their new friends Crystal, Keene, and Pierce, who has been quiet and moody ever since his grades started dropping in Mrs. Obscura’s class.

These characters are designed to engage students in a fun way and demystify all that surrounds visiting an eye doctor or getting ready for an in-school vision screening.



Is your class ready to get their Vision UnLocked?

Your students' four best friends—Crystal, Lens, Iris, and Keene—have just learned someone has been tampering with their lockers. Whoever it was has changed all the locker combinations, except for Crystal's, and destroyed their class projects that are due tomorrow. Only Pierce's locker remains untouched. Your students need to open up every locker and give themselves a crash course in vision health in order to set things right and save their friends' grades.

We encourage teachers to send finished projects to the Lions World Vision Institute for future exhibits that showcase Vision UnLocked or share them with their Lions World Vision Institute in-school vision professional, where they can display it for the world to enjoy!





Module 1

Vision in Childhood



Teacher Guide: Your Vision in Childhood

Introduction and Vocabulary

Objectives:

- Students will have an understanding of how eyes develop from babyhood to preschool age.
- Students will learn basic eye anatomy vocabulary.

In this Module:

At the end of the module, students will have created a class mini library about eye development ready to donate to an elementary school if desired.

Instructions:

Introduce a new unit called “Vision UnLocked.” Discuss the sense of sight and the importance of vision in day to day activities students take part in now and will take part in later in life, such as driving. Introduce the characters of Crystal, Lens, Iris, and Keene, students at Horizon Middle School, in Mrs. Obscura’s science class. Someone has messed with their lockers, and each of them has a project due tomorrow! Crystal’s locker is the only one with the locker combination unchanged, so you’ll start with helping her rebuild her project. Her project is supposed to be a children’s picture book library focused on the eyes. Before we can start, we need to become familiar with the vocabulary.

Vocabulary:

Prepare a jar of vocabulary words. Have every student find a partner and select a vocabulary term from the jar. Students will define and illustrate their term on the sheet of paper provided. Display the vocabulary on a wall along with a large illustration of the human eye. Go over each vocabulary word with the students, giving the definition, and a sample sentence, or explanation, then add the words on the wall to be displayed throughout the unit.

- **Vision:** The act or power of seeing.
- **Eye:** The eyes are organs that allow one to see. Eyes take in light and send visual information to the brain. Eyes can see in all directions including the front and sides (peripheral vision).
- **Pupil:** The pupil is the opening in the eye’s center. This is where light enters and then goes through the lens. The pupil has muscles. When the pupil needs more light, it expands. In bright light, the pupil is made smaller.
- **Cornea:** A clear or transparent tissue that covers and protects the eye. The main function of the cornea is to refract, or bend light. The cornea acts as the eye’s outermost lens and helps focus light as it enters the eye.
- **Retina:** The tissue found in the back of the eyeball. The retina “receives” images and sends it to your brain. The information is transmitted through the optic nerve.
- **Fovea:** This is a small, central area within the retina of the eye that is responsible for sharp and detailed vision.

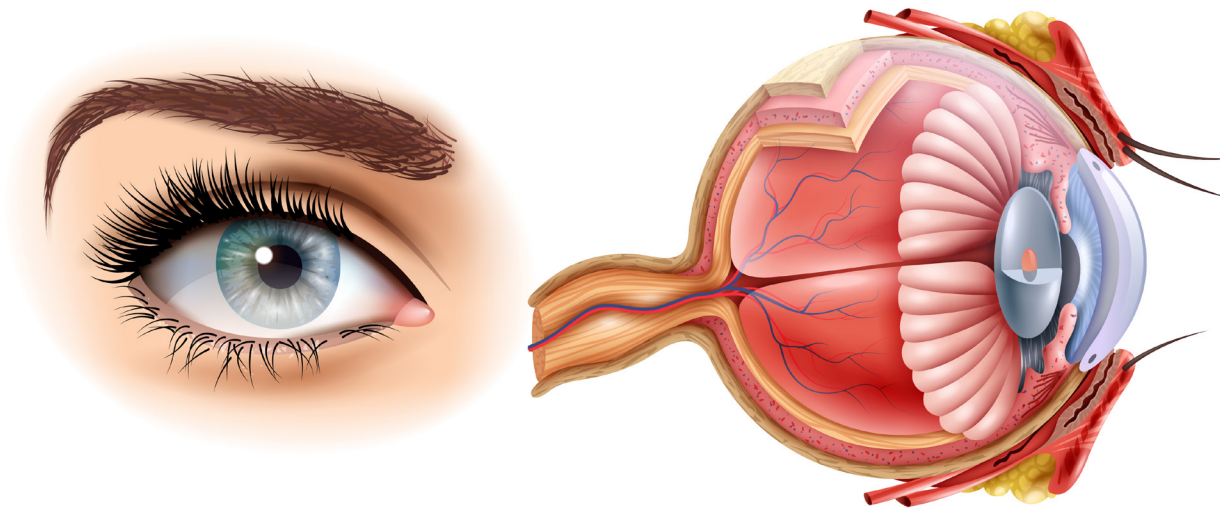
Vocabulary Continued >

Teacher Guide: Your Vision in Childhood

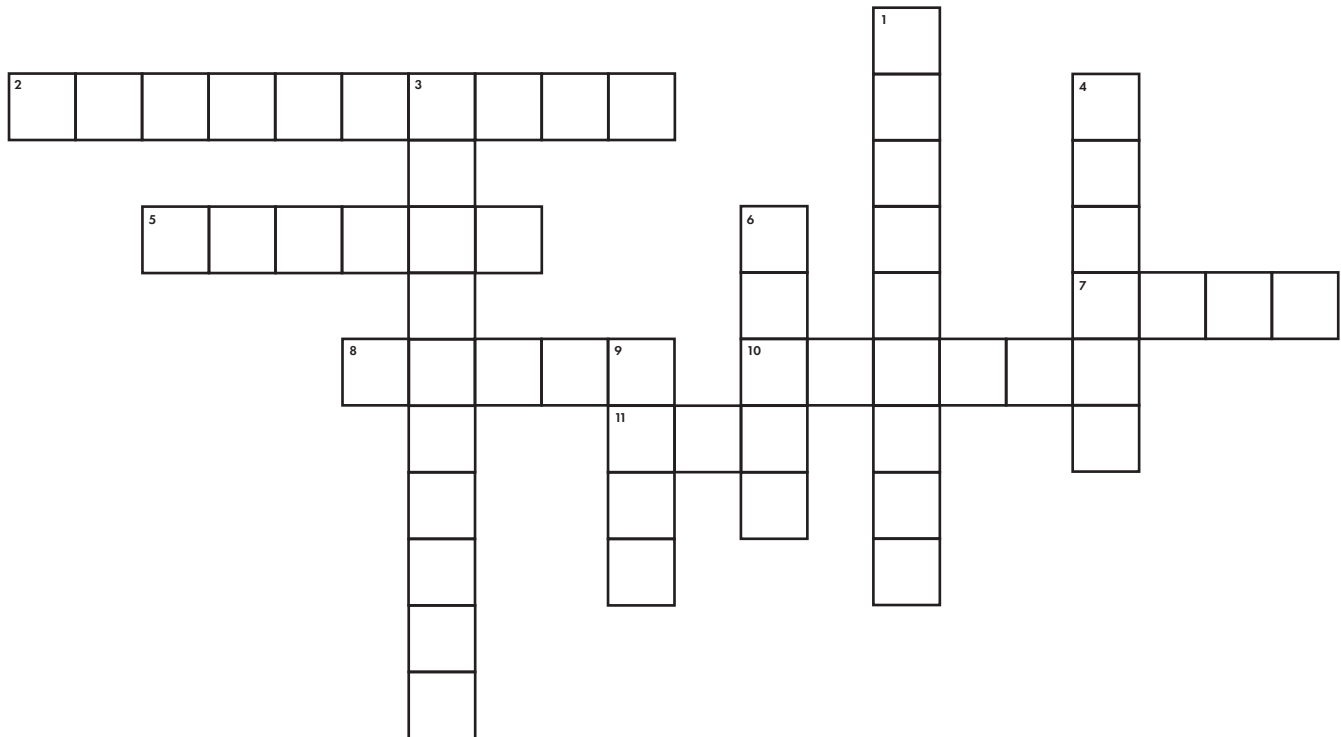
Introduction and Vocabulary

Vocabulary Continued:

- **Lens:** Located toward the front of the eye. The lens is held in place by ligaments. It helps focus light rays that enter the eye.
- **Iris:** This is the colorful part of the eye that is front and center of the eyeball. The iris helps control the amount of light that enters the eye.
- **Optic Nerve:** This nerve carries messages from the retina to the brain. This process results in a visual image. There are millions of fibers that make up the optic nerve.
- **Blind Spot:** This is a small area in the back of the eye where the optic nerve connects to the retina. This area lacks light-sensitive cells. As a result, the blind spot does not contribute to our ability to see.
- **Eye Muscles:** These are a group of muscles surrounding and within the eye that work together to control the movement and positioning of the eyeball. These muscles allow us to perform essential functions such as looking in different directions, tracking moving objects, and maintaining a stable gaze.



Worksheet 1.1: Vocabulary Practice



Down:

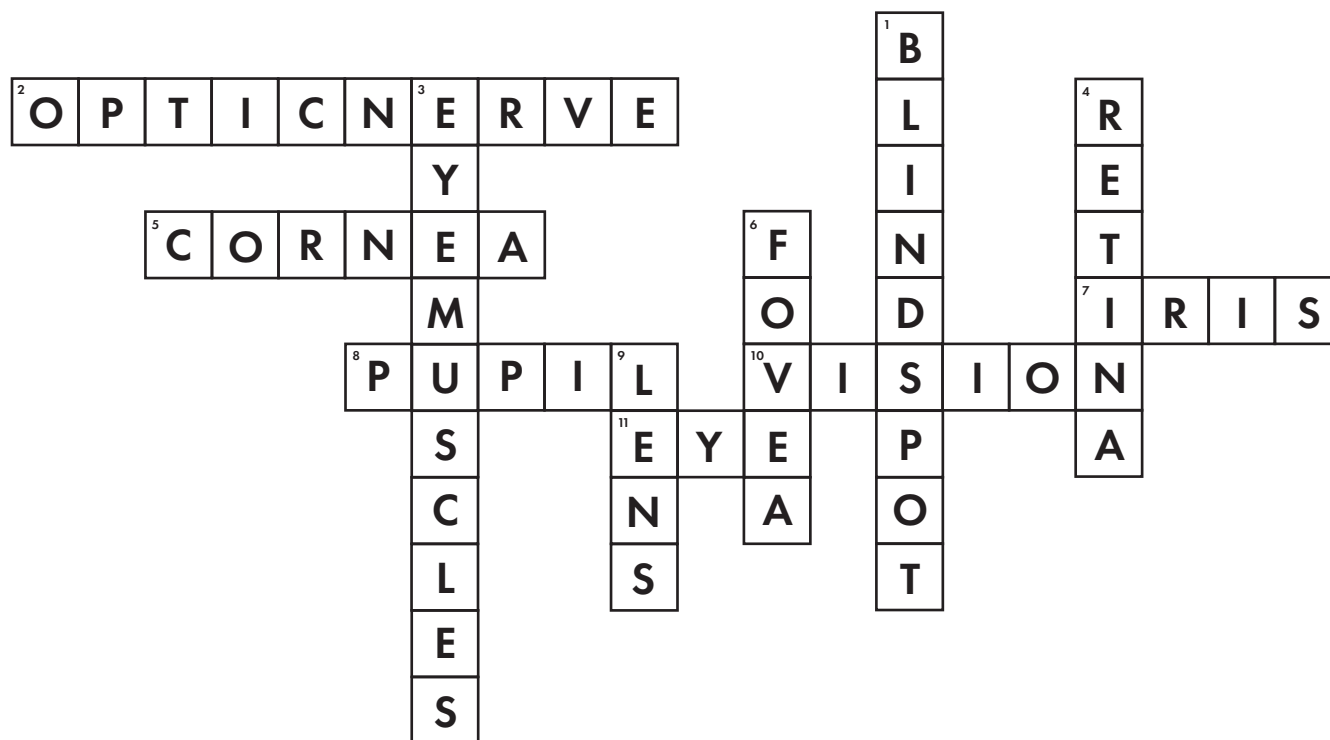
1. This is a small area in the back of the eye where the optic nerve connects to the retina. This area lacks light-sensitive cells. As a result, the blind spot does not contribute to our ability to see.
3. These are a group of muscles surrounding and within the eye that work together to control the movement and positioning of the eyeball. These muscles allow us to perform essential functions such as looking in different directions, tracking moving objects, and maintaining a stable gaze.
4. The tissue found in the back of the eyeball. The retina "receives" images, and sends it to your brain. The information is transmitted through the optic nerve.
6. This is a small, central area within the retina of the eye that is responsible for sharp, and detailed vision.
9. Located toward the front of the eye. The lens is held in place by ligaments. It helps focus light rays that enter the eye.

Across:

2. This nerve carries messages from the retina to the brain. This process results in a visual image. There are millions of fibers that make up an optic nerve.
5. A clear, or transparent tissue that covers and protects the eye. The main function of the cornea is to refract, or bend light. The cornea acts as the eye's outermost lens, and helps focus light as it enters the eye.
7. This is the colorful part of the eye that is front, and center of the eyeball. The iris helps control the amount of light that enters the eye.
8. The pupil is the opening in the eye's center. This is where light enters and then goes through the lens. The pupil has muscles. When the pupil needs more light, it expands. In bright light, the pupil is made smaller.
10. The act or power of seeing.
11. The eyes are organs that allow one to see. Eyes take in light, and send visual information to the brain. Eyes can see in all directions including the front, and sides (peripheral vision).



Worksheet 1.1: Vocabulary Practice Answers



Down:

1. This is a small area in the back of the eye where the optic nerve connects to the retina. This area lacks light-sensitive cells. As a result, the blind spot does not contribute to our ability to see.
3. These are a group of muscles surrounding and within the eye that work together to control the movement and positioning of the eyeball. These muscles allow us to perform essential functions such as looking in different directions, tracking moving objects, and maintaining a stable gaze.
4. The tissue found in the back of the eyeball. The retina "receives" images, and sends it to your brain. The information is transmitted through the optic nerve.
6. This is a small, central area within the retina of the eye that is responsible for sharp, and detailed vision.
9. Located toward the front of the eye. The lens is held in place by ligaments. It helps focus light rays that enter the eye.

Across:

2. This nerve carries messages from the retina to the brain. This process results in a visual image. There are millions of fibers that make up an optic nerve.
5. A clear, or transparent tissue that covers and protects the eye. The main function of the cornea is to refract, or bend light. The cornea acts as the eye's outermost lens, and helps focus light as it enters the eye.
7. This is the colorful part of the eye that is front, and center of the eyeball. The iris helps control the amount of light that enters the eye.
8. The pupil is the opening in the eye's center. This is where light enters and then goes through the lens. The pupil has muscles. When the pupil needs more light, it expands. In bright light, the pupil is made smaller.
10. The act or power of seeing.
11. The eyes are organs that allow one to see. Eyes take in light, and send visual information to the brain. Eyes can see in all directions including the front, and sides (peripheral vision).

Lesson 1.1: Eye Anatomy

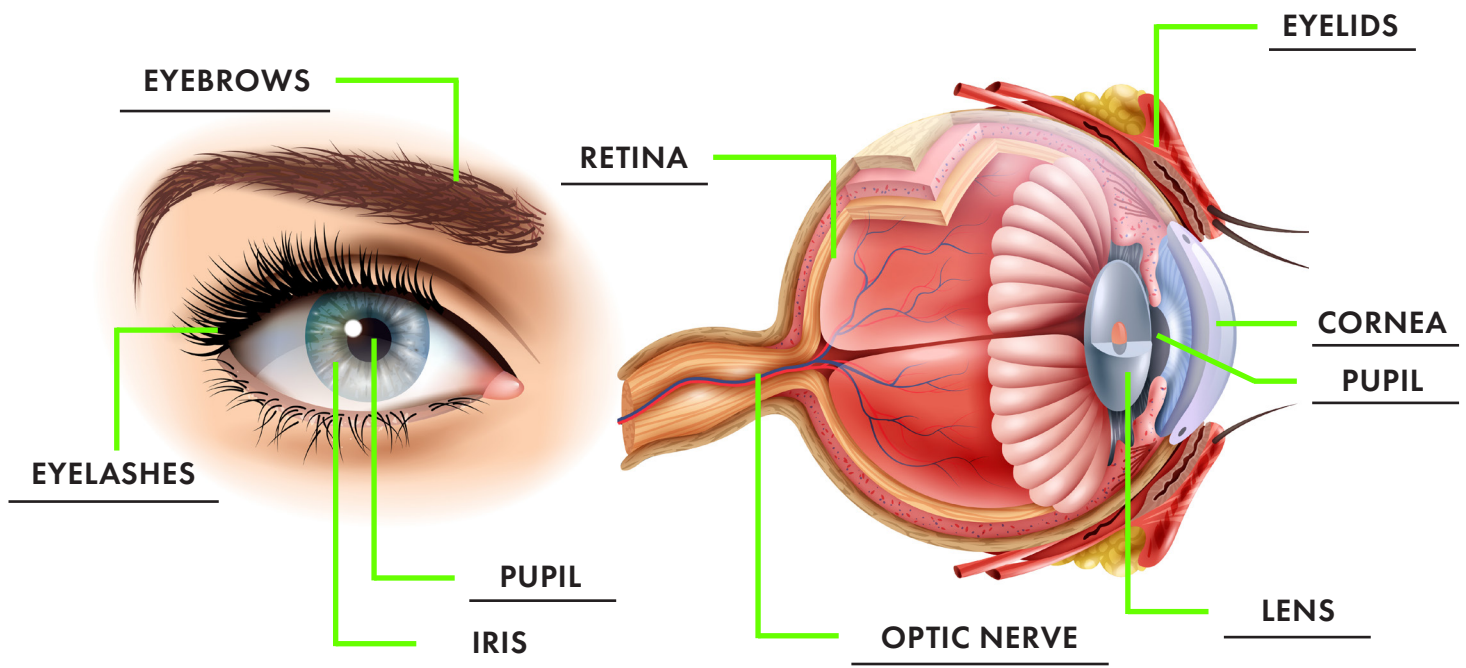
Supplies: Magnifying glasses (multiple, if possible) | Tiny toys

Teacher Instructions: People with nearsightedness have difficulty seeing things far away, while those with farsightedness may have trouble seeing nearby objects. Please explain that light not landing on the retina correctly can lead to nearsightedness, farsightedness, and blurred vision.

- Grab a magnifying glass and have volunteer students experiment with focusing it on different objects. Discuss how the lens in our eyes works similarly, bending light to hit the right spot on the retina.

Explain that problems with eye muscles can lead to strabismus (crossed eyes), or amblyopia (lazy eye).

- You may choose to display images of crossed eyes or lazy eyes as visual aids.





Eye Anatomy

NAME _____

Instructions: Label the parts of the eye using the vocabulary bank. *Hint: One word appears twice!*

CORNEA

EYEBROWS

EYELASHES

EYELIDS

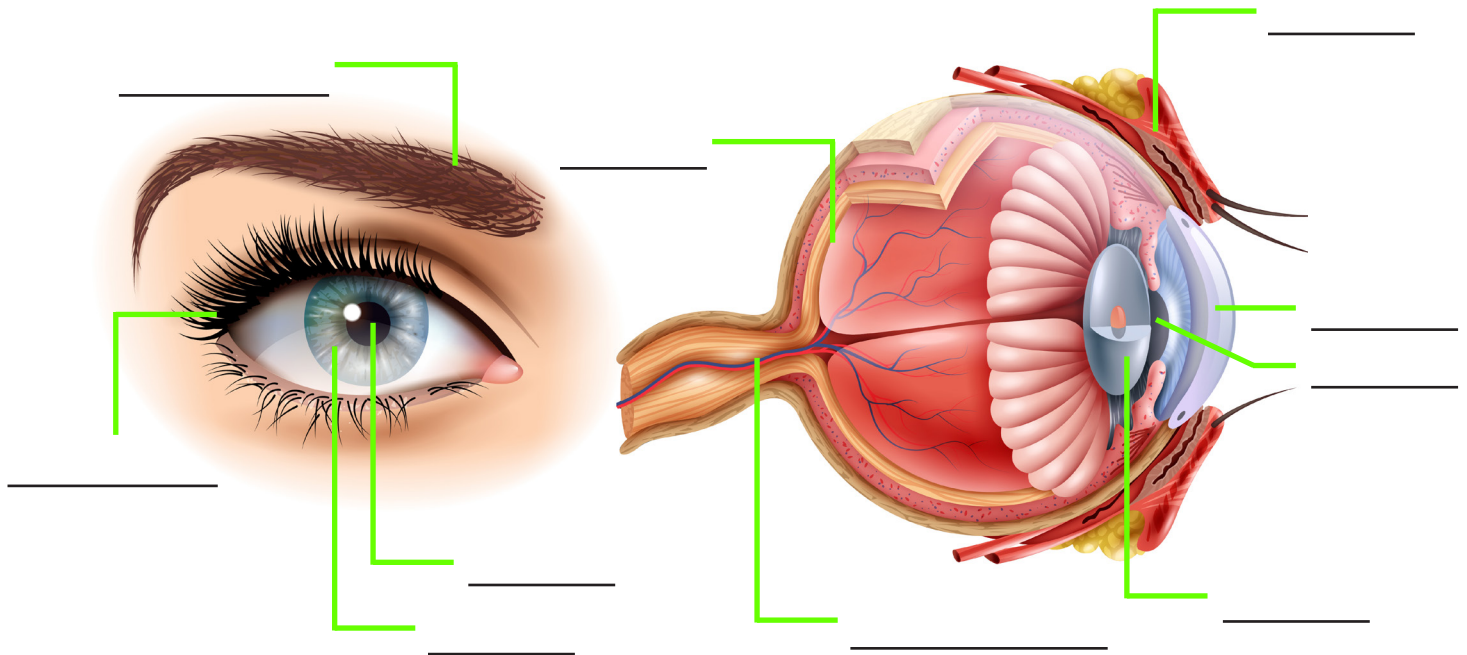
IRIS

LENS

OPTIC NERVE

PUPIL

RETINA





Lesson 1.2: Children's Eye Development

Supplies: Roll of butcher paper | Permanent Markers

Teacher Instructions: Encourage students to gather around as you roll out the butcher paper and narrate your drawing of the following timeline.

- **Birth to 6 months:** Eyes are gaining abilities like focusing and seeing in 3D with more color; first eye exam at 6 months.
- **6 months to 1 year:** Improved hand-eye coordination, distance judging, and grabbing.
- **1 year to 2 years:** Better perception and object recognition; can start scribbling with crayons.
- **Preschool:** Learning to recognize and copy lines and shapes. Builds early reading skills. Students should be able to identify pictures. Depth perception, hand-eye coordination, fine motor skills, and visual memory should all show improvement.
- **10 years:** A child's vision is fully developed.

Explain to students that, if they have a baby sibling at home, they should try playing patty cake, reading aloud, narrating what they're doing, and playing with toys on the floor with them to help their vision develop.

- Allow students to share anecdotes of them witnessing vision milestones within young members of their family, or milestones within their own lives (such as getting glasses like Lens).

End the lesson by telling students that if they're experiencing unusual symptoms, alert an adult for medical attention, and that people can take steps to protect their vision by wearing your glasses, taking screen breaks, and eating veggies.



What Exactly Children See

NAME _____

Instructions: Match the milestone to its Appropriate Age Range.

Age Range Timeline:

Milestone:

Birth to 6 months

Better perception and object recognition; can start scribbling with crayons

6 months to 1 year

Learning to recognize and copy lines and shapes. Builds early reading skills. Should be able to identify pictures. Depth perception, hand-eye coordination, fine motor skills, and visual memory should all show improvement

1 year to 2 years

Improved hand-eye coordination, distance judging, and grabbing

Preschool

A child’s vision is fully developed

10 years

Eyes are gaining abilities like focusing and seeing in 3D with more color; first eye exam at 6 months



Activity 1.3: Eye Anatomy Bookmarks

Supplies: Colored paper | Markers | Colored pencils | Yarn | Scissors | Glue

Teacher Instructions: Explain that Crystal wants to include educational bookmarks in her library. Provide students with art supplies such as colored paper, markers, colored pencils, yarn, scissors, and glue. Instruct students to create bookmarks that illustrate the anatomy of the eye. Emphasize the importance of accuracy in depicting the structures and their positions within the eye. Students should illustrate the path of light as it enters the eye, passes through the cornea and lens, and either hits or does not hit the retina.

Have students label key structures using learned vocabulary such as the cornea, lens, retina, and optic nerve on the bookmark.

Students should explain on the back of the bookmark their design choices, the significance of depicting the anatomy of the eye, and the path of light, including whether the depicted eye would have nearsightedness or farsightedness.



Activity 1.4: Creating the Library

Supplies: 4 sheets of paper folded and stapled into booklets | Art supplies such as markers and pens | Computers with access to simple graphic design programs like Canva

Teacher Instructions: All of the picture books Crystal was going to have in her library have been stolen! Your students will have to recreate them. Divide the class into groups and assign each group one of the following topics:

- Baby's Eye Development
- Preschooler's Eye Development

Students can choose whether to use computers, or create hand-drawn illustrations for their picture books. Regardless of the design method chosen, the end result should be a physical paper book. Students can compile their pages and bind them together neatly. Encourage creativity in the book cover design. Teachers, use your discretion, but encourage students to research and cite at least two online or print resources.

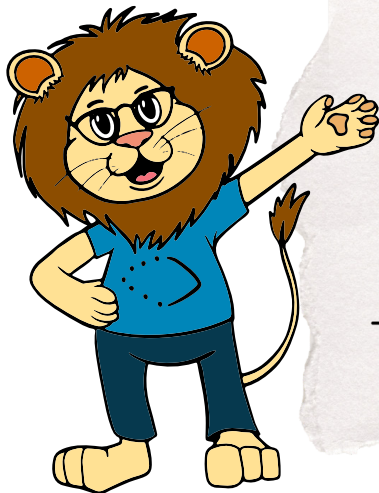
Each group will present their picture book to the class. This can include explaining the content, discussing the creative choices made, and addressing any questions from their peers.

Activity 1.5: The Final Book

Supplies: Paper | Pencils | Markers | Clear front report cover

Teacher Instructions: Crystal is grateful for your students' help, and she wants to include one final book of which everyone can be credited as an author. Students will depict a timeline of their (or a loved one's) eyesight development, including personal milestones, such as when glasses and/or contacts were obtained, significant eye doctor appointments, etc.

After all students have submitted their pages, assemble them into a book using the clear front report cover. Covertly add the following slip of paper to the book:



NEW LOCKER COMBO - LENS

_ months = first eye exam

_D = not flat; has thickness

_ years old = vision fully developed

Present the book to the class, and while flipping through the pages, let the slip of paper fall out. Pass the paper around or display it overhead. Have your students fill in the blanks to figure out the combination to Lens's locker, and move on to the next module.

ANSWER KEY:

6 months = first eye exam

3D = not flat; has thickness

10 years old = vision fully developed



Module 2

Avoidable Blindness in Childhood



Teacher Guide: Avoidable Blindness in Childhood

Objectives:

- Students will have an understanding of the common causes of vision issues in children.
- Students will learn common statistics regarding blindness in America's youth.
- Students will gain real-world knowledge about how they can protect their eyes, including by means of eating foods rich in nutrients that promote eye health.

In this Module:

By the end of this module, students will not only understand the causes of avoidable blindness in children, but also become digital ambassadors by creating informative websites to spread awareness.

Instructions:

Remind students that, in the last module, they recovered the combination to Lens's locker. Explain to students that Lens' laptop in his locker was hacked into, and now the informational websites he created for his project on the causes of avoidable blindness have been wiped clean off the Internet. Lens has asked the class to help him recreate the websites.

Lesson 2.1 Early Detection

Teacher Instructions:

Read aloud the following paragraph to students and display the text on the overhead for better comprehension:

“Did you know that 1 out of every 4 kids in the United States might have a vision problem they don’t know about? When you’re young, about 80% of what you learn comes through your eyes! Your eyes are like windows to the world, giving you important information about everything around you. Sometimes, eye problems don’t show any symptoms, which is why it’s important to get your vision checked regularly. Vision screening helps find these problems early, so they can be treated before they cause bigger issues. This ensures that kids can see well and keep up with their schoolwork and friends.”

Using the overhead, project the cover page of this document – the cover with all the lions. Direct students’ attention to the characters of Lens and Crystal (both of whom have glasses).

Ask students what they think would happen if Lens and Crystal never went to the eye doctor. (They wouldn’t have glasses, and they wouldn’t be able to see. They’d also likely experience symptoms like headaches and blurry vision. Their vision could worsen without proper correction.)





Activity 2.1 Overview of Statistics

Pass out a copy of the worksheet to every student. Students will fill in the blanks with the correct numbers while you read off the statistics. Pause after every statistic to ask students, and discuss why the numbers are as high, or low as they are, and possibly ask for relevant anecdotes from students.

According to the CDC, 6.8 % of children younger than 18 in the United States have a diagnosed eye and vision condition, and 3 % are blind or visually impaired.

Less than 22 % of preschool children receive some type of vision screening.

Marginalized communities are at higher or lower risk of blindness.

In a survey, 70 % of respondents said their day-to-day life would be greatly impacted by losing their vision, but less than 11 % knew there were no early warning signs of some eye diseases like glaucoma and diabetic retinopathy.



Overview of Statistics

NAME _____

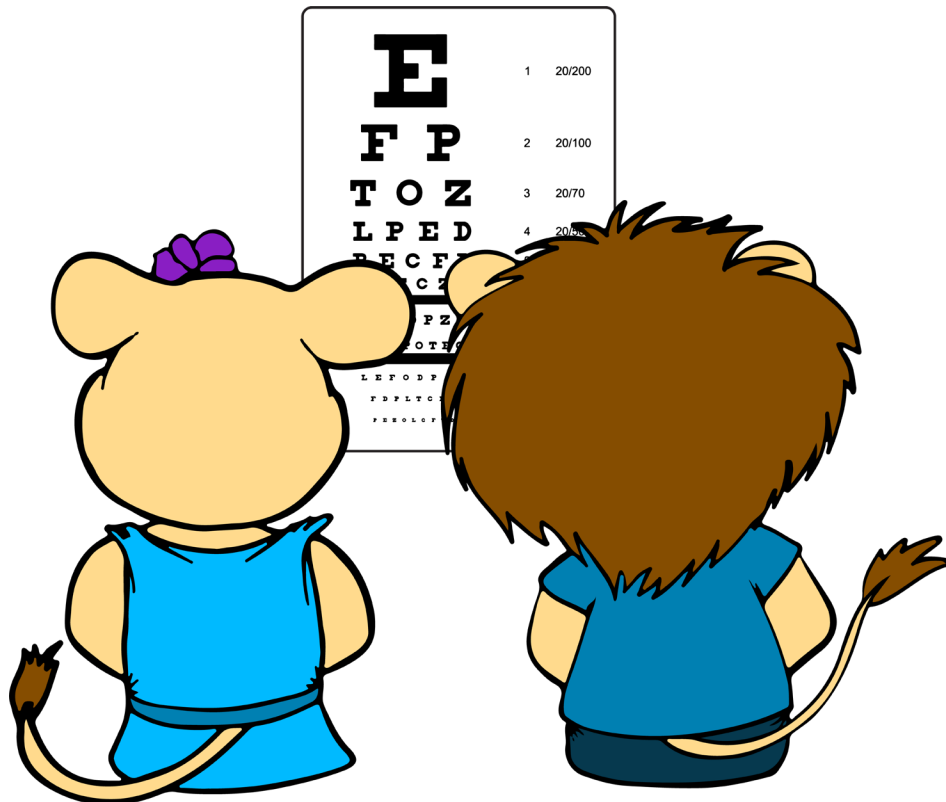
Instructions: Fill in the blanks with the number that you guess, or circle one of the options.

According to the CDC, _____ % of children younger than 18 in the United States have a diagnosed eye and vision condition, and _____ % are blind or visually impaired.

Less than _____ % of preschool children receive some type of vision screening.

Marginalized communities are at higher or lower risk of blindness.

In a survey, _____ % of respondents said their day-to-day life would be greatly impacted by losing their vision, but less than _____ % knew there were no early warning signs of some eye diseases like glaucoma and diabetic retinopathy.





Lesson 2.2 Protecting the Eyes

Guide your students in small group discussions about how to protect their eyes. Present each of the following suggestions to the whole class, and have them discuss within their groups why that would be helpful in preventing blindness.

- Go to the eye doctor and, if you're having vision problems, tell the truth. The doctor wants to help you see better so you can enjoy school, sports, videos and other fun activities.
- Wear prescribed eyewear.
- Eat a healthy diet with vitamins C and E, zinc, essential fatty acids, lutein, and zeaxanthin.
- Ask questions about your family's vision history.



Activity 2.2: World Weyed Web

Supplies: Computers with access to the internet

Teacher Instructions: Divide the class into groups, ensuring a diverse mix of skills and strengths in each group. Assign each group one of the following topics:

- Retinopathy of Prematurity Early Detection
- Diabetic Retinopathy Early Detection
- Refractive Errors Early Detection
- Nystagmus Early Detection

Allow groups to choose between Canva, Google Sites, or any other free web design platforms they may already be familiar with to design a website on their topic. (If needed, tutorials can be found on the LWVI official YouTube channel at youtube.com/@LionsEyeInstitute).

Groups should be given ample time to independently research their given topics, and design websites based around them. Point them to reliable resources such as the CDC.

The content of the final product should include clear explanations, relevant examples, and engaging visuals. Emphasize the importance of high contrast for accessibility to the vision impaired. Encourage the inclusion of interactive elements such as quizzes, or activities related to their statistical topic. Each website should include at least two hyperlinks that lead to external sources providing further information on the statistical concept.

Allocate time for each group to present their website to the class. This can include a walkthrough of the content, an explanation of design choices, and a demonstration of interactive elements.

Activity 2.3: Class Recipe Blog

Supplies: Computers with access to the internet

Teacher Instructions: To round out Lens's World Weyed Web project, students will type up a recipe with ingredients that promote healthy vision based on the understanding of what vitamins and nutrients support eye health. The recipe can either be from a family member (who must be credited), a recipe blog (which must be credited), or an original recipe. Ask students to choose one nutrient from their recipe, and provide a one-paragraph explanation of how it contributes to eye health below the recipe.

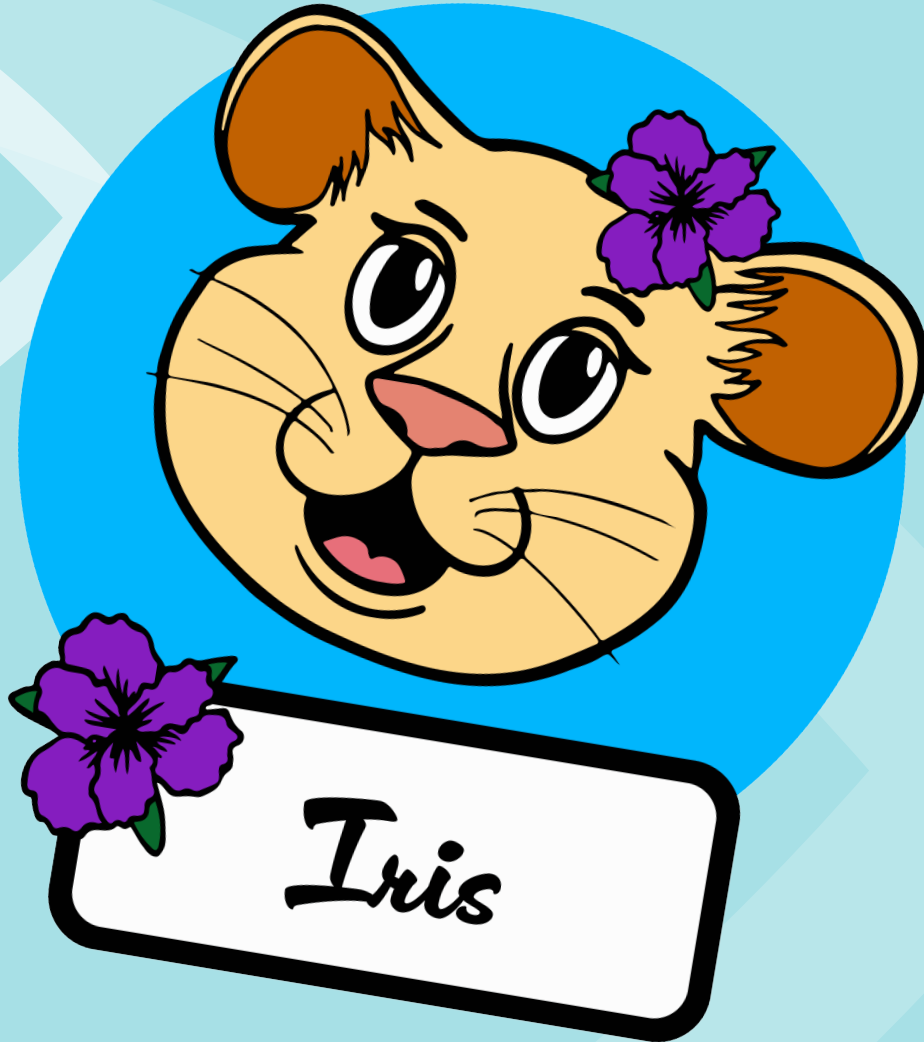
Depending on the resources available, you may consider organizing a tasting session where students can sample each other's recipes.

After completion, add each recipe as a blog post on a blogging platform such as Blogger. Share the URL with students and point out an additional page you've added to the site titled *Message from ???*. The page should have the following image:



Dear Iris,
I feel FORTYunate to have met
you in Mrs. Obscura's class. You're
the only one who talks to me.
TWO bad I can't tell you your new
locker combination. I must have
my revenge against your fri3nd5.
Sorry you were caught in the
middle of all this.
Sincerely,
Your Frenemy

Again, have your students decode the message to figure out the combination to Iris's locker.



Module 3

Vision Issues



Teacher Guide: Vision Issues

Objectives:

- Students will be able to name, and describe common vision issues.
- Students will know the warning signs of vision issues and know what to do if they're spotted in themselves or others.

In this Module:

At the end of the module, students will be able to identify both visible and invisible signs of vision issues and understand how these symptoms can sometimes mimic other problems. They'll also be familiar with common vision issues such as myopia, hyperopia, astigmatism, amblyopia, strabismus, and color vision deficiencies, as well as understand the common causes of these issues.

Instructions:

Remind students that, in the last module, they recovered the combination to Iris's locker. Explain to students that Iris, the most kind-hearted, and theatrical one of the bunch, planned to put on a show as her project, but all of the scripts for her skits that were in her locker have mysteriously gone missing. Worse, the informational brochures she was going to pass out at the end of her performances have been ripped to shreds! Students will need to help Iris put on her show.

Lesson 3.1: Signs of Vision Issues

Pass out a copy of the worksheet to every student. Mention a sign of a vision issue, then have students shout out whether that would count as a visible or invisible sign of a vision issue. Mention that Pierce has been complaining of some of these symptoms, like headaches and the bright lights in the classroom bothering him. After the columns are filled, have students turn to a partner and brainstorm what these symptoms might also appear to indicate.



VISIBLE SIGNS:

Misaligned eyes
Red or swollen eyes
Eyes seem to bulge
Drainage or excessive tearing
Squinting
Dilated eyes
Blinking/rubbing their eyes
Covering one eye
Seeing a white reflection in their eyes
Red, gray or brown spots in the eye
Holding reading materials up to the face
"Jiggly" eyes
Droopy eyelids
Eye of unusual size

INVISIBLE SIGNS:

Blurry vision
Double vision
Sensitivity to light
Headaches
Seeing spots
Short attention span
Difficulty reading
Trouble focusing the eyes

VISION ISSUES CAN MASQUERADE AS:

Disruptive talking, clumsiness, acting out, disinterest in school work, headaches and squinting, can't maintain focus, holding things too closely, self isolation, social awkwardness.



NAME _____



VISIBLE SIGNS:

INVISIBLE SIGNS:

VISION ISSUES CAN MASQUERADE AS:



Lesson 3.2: Common Vision Issues

Pass out a copy of the worksheet to every student. Based off of what's written in the effect column, ask students what they think may be the cause of each condition, providing them with the answer if students draw a blank.

CAUSE:

Amblyopia: Squinting, Shutting one eye, Tilting head, Poor depth perception.

Astigmatism: Blurred vision, Imperfection in shape of eye (May not be visible while looking at face).

Color Vision Deficiencies: Seeing and describing colors differently than most other people.

Hyperopia: Squinting while trying to read, Headaches, Trouble seeing things up close.

Myopia: Squinting while looking at distant objects, Headaches, Trouble seeing things far away.

Strabismus: Looking in different directions at the same time, Shutting one eye, Tilting head.

EFFECT:

Amblyopia: Impaired or dim vision without obvious defect, or change in the eye.

Astigmatism: A defect in the eye, or in a lens, which results in distorted images, as light rays are prevented from meeting at a common focus.

Color Vision Deficiencies: Color vision deficiency is the inability to distinguish certain shades of color. The term "color blindness" is also used to describe this visual condition.

Hyperopia: Farsightedness.

Myopia: Nearsightedness.

Strabismus: Also known as hypertropia, and crossed eyes.



Common Vision Issues

NAME _____

Instructions: Fill in the left column with what you think causes the condition in the right column.

CAUSE:

EFFECT:

Amblyopia: Impaired or dim vision without obvious defect, or change in the eye.

Astigmatism: A defect in the eye, or in a lens, which results in distorted images, as light rays are prevented from meeting at a common focus.

Color Vision Deficiencies: Color vision deficiency is the inability to distinguish certain shades of color. The term "color blindness" is also used to describe this visual condition.

Hyperopia: Farsightedness.

Myopia: Nearsightedness.

Strabismus: Also known as hypertropia, and crossed eyes.



Activity 3.3: Informational Brochures

Supplies: Computers with access to the internet | Construction Paper | Markers | Pens | Scissors | Glue

Teacher Instructions: Assign each student (or allow each student to choose) a specific common vision issue introduced in this module to independently research, and create an informational brochure. Each brochure should include the following:

- Overview of the vision issue
- Causes and risk factors
- Symptoms
- Prevention tips (if applicable)
- Treatment options

Encourage creativity in the design of the brochure. Students can use graphic design tools, drawing, or collage techniques to make the information visually appealing and easy to understand.

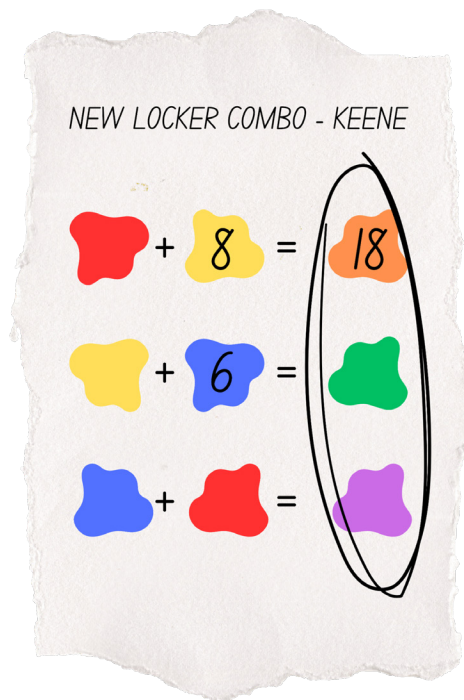
After students have created their brochures, divide students into groups such that every group has every vision issue represented. Students should present their brochures and allow everyone to read each other's brochures, providing oral feedback, and asking each other questions.

Activity 3.4: Putting on Performances

Supplies: Paper | Pens | Prop glasses if available or desired

Teacher Instructions: Pair students into groups of two. Each group will be responsible for creating, and performing a skit. One character should be experiencing visible, or invisible signs of vision issues, and the other character should be the convincing advocate for visiting the eye doctor. The script should include dialogues that address the signs of vision issues, the importance of seeking professional advice, and the potential positive outcomes of an eye check-up.

While students are occupied during rehearsals, cut out the following image, and rip it into as many pieces as there are pairs of students:



Provide an opportunity for each pair to perform their skit in front of the class. After each performance, hand each pair a piece you've ripped, then open the floor for brief discussions on the effectiveness of the skit in conveying the importance of eye health. After every pair has gone, have students collaborate to tape the image up, and decode Keene's locker combination. Be sure to point out how color blindness would affect the class's ability to solve the puzzle.



Module 4

Interesting Eyes

A STEM Curriculum for Students: Grades 6-8: Teacher Copy



Teacher Guide: Interesting Eyes

Objectives:

- Students will learn new facts about the eyes that pique curiosity about how vision works, potentially sparking further independent investigation.
- Students will interact with a professional (or soon-to-be professional) in the eye care industry, dispelling any remaining qualms about visiting eye doctors.

In this Module:

At the end of the module, students will feel comfortable visiting the eye doctor and discussing all aspects of the human eye.

Instructions:

Remind students that, in the last module, they recovered the combination to Keene's locker. Explain to students that Keene's project revolved around learning more in-depth knowledge from experts and exploring more "fun facts" about the eyes. Lament that you've opened up the final locker, and you're no closer to discovering who messed with Crystal, Lens, Iris, and Keene.



Lesson 4.1: How Often to See an Eye Doctor

Supplies: Yarn and index cards, or markers for the whiteboard. Cut-outs of all the characters from the first page of this document.

Teacher Instructions: Begin the lesson by engaging the students in a discussion using the following questions.

Why do we need regular eye check-ups?

- Lead students to the purpose of regular eye check-ups: to detect any vision problems early, prevent eye diseases, and maintain overall eye health.
- Discuss common eye problems such as nearsightedness, farsightedness, and astigmatism, as well as eye diseases.

How often do you think you should see an eye doctor?

- Create a timeline either on the whiteboard using markers, using yarn and index cards along a wall, or digitally. Mark these important milestones:
 - 6–12 months old: comprehensive eye exam
 - 3 years old
 - 5 years old (before kindergarten)
- Then add one mark for every year up to and including the age of your oldest student.
- Use cut-outs of Pierce, Keene, Crystal, Iris, and Lens and move them along the vision timeline:
 - Crystal got glasses for her nearsightedness in fifth grade and has been seeing her eye doctor every year since then to keep her prescription updated and ensure her eyes stay healthy throughout middle school.
 - Lens was diagnosed with farsightedness in second grade and has been faithfully visiting the eye doctor every year since then to monitor his vision and ensure his glasses are still effective as he navigates middle school.
 - Iris has always had perfect 20/20 vision and has never needed glasses. Even though her vision is clear, she goes for routine eye check-ups every year to maintain her excellent eye health. Vision issues run in her family, so she never misses an appointment!
 - At three years old, Keene was diagnosed with strabismus, underwent successful surgery, and now enjoys clear vision without glasses. After his surgery, he saw his eye doctor frequently for follow-ups, but now he goes for annual check-ups to ensure his eyes stay healthy and his vision remains sharp.
 - Pierce had eye exams at six months, three years old, and kindergarten, but hasn't been back to the eye doctor since.

Students can choose to bring in pictures of themselves or someone they know to place on the timeline if they know when they got glasses or were diagnosed with a vision problem.

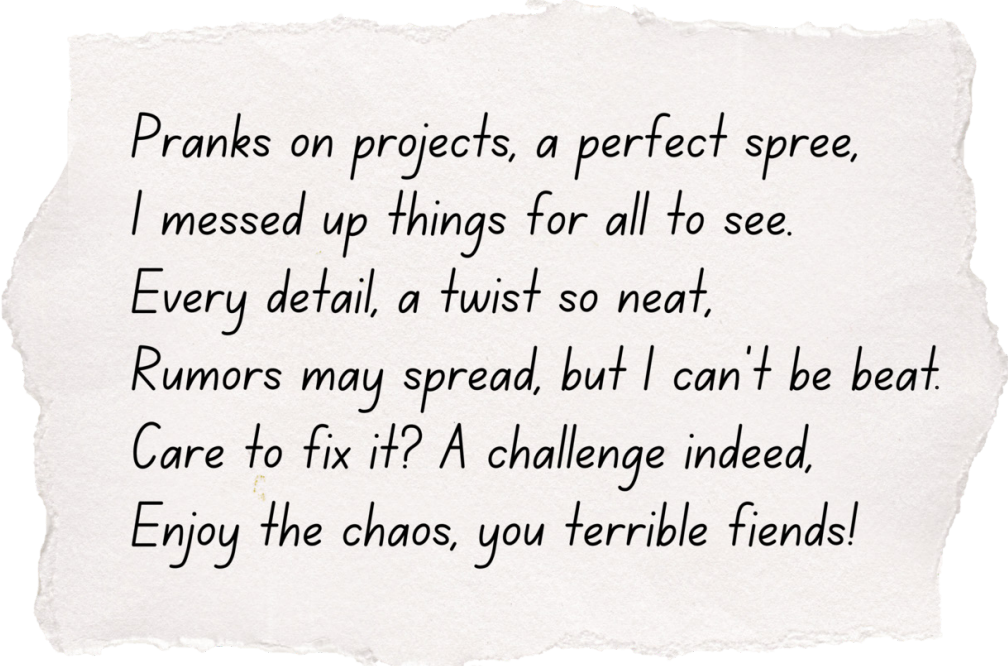


Activity 4.1: Interview with an Eye Expert

Teacher Instructions: Reach out to local eye care professionals, or connect with educational institutions to find an eye doctor, or an ophthalmology student willing to conduct a virtual session with your class. Coordinate and schedule a suitable time for the virtual visit, and ask them to mention how frequently students should visit the eye doctor. Encourage students to prepare questions in advance.

Instruct each student to take notes during the virtual visit, and list three key things they learned. This could include insights into eye health, interesting facts about the eye, or career-related information. After the virtual visit, allocate time for a class discussion. Encourage students to share their three key takeaways.

Students should turn in their three key takeaways during the last few minutes of the class period. Shuffle through the responses, and pull out the following slip of paper:



*Pranks on projects, a perfect spree,
I messed up things for all to see.
Every detail, a twist so neat,
Rumors may spread, but I can't be beat.
Care to fix it? A challenge indeed,
Enjoy the chaos, you terrible fiends!*

Hint until the students figure out it is an acrostic, with the answer being PIERCE, the name of the perpetrator. Discuss with students why Pierce might have targeted the four friends. Pierce's motivation was feeling insecure about his dropping grades. He wanted to "fit in" with having good grades. The headaches from dealing with blurry vision added to his irritability caused him to act out. It can be hard for kids to voice health concerns and sometimes, scary. If the students need a hint, refer to Pierce's illustration and that he doesn't have glasses. Pierce, needs glasses and/or contacts, and should see an eye doctor. If appropriate, tailor this discussion to suit topics previously discussed around cliques, bullying, etc. in your school.

Activity 4.2: Fun Wrap-up

Supplies: Computers with access to the internet

Teacher Instructions: Scroll through the selection of TedEd videos on various aspects of vision and eye health. (LINK: <https://www.youtube.com/@TEDEd/search?query=eye>) Instruct students to choose one that is relevant to the topics discussed or one that sparks their interest. Instruct students to conduct additional research on the topic from their chosen video. Encourage them to explore scientific articles, reputable websites, or books to gather more in-depth information.

Ask each student to create a concise six-slide presentation using Google Slides, PowerPoint, or Canva based on their chosen topic. The presentation should include key information, visuals, and any relevant statistics, or data. Guide students to include the following elements in their presentations:

- Introduction to the topic
- Explanation of key concepts
- Connection to broader concepts in vision learned in the unit
- References or sources for further exploration

Schedule a day for students to present their mini deep dives to the class. Each presentation should be around five minutes, allowing time for questions and discussion afterward.

Bonus: Where to Learn More

Consider exploring these resources with students, or offering extra credit to students who screen record themselves visiting the following sites, or in some other way provide proof that they visited.

- Curriculum for Middle & High School: <https://www.wiseabouteyes.org/one-pair-of-eyes>
- NEI for Kids: <https://www.nei.nih.gov/learn-about-eye-health/nei-for-kids>
- Eye Adventures with Lens and Iris: https://lwvi.org/wp-content/uploads/2023/06/LION_2304-0003-STEM-Materials-Module-1-3-V2-1.pdf

