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Lesson 7: Techniques for Maximizing Low Vision

Introduction

Low vision is a term used to describe a person who has some remaining vision that cannot be corrected by standard correction but is still useful. This vision impairment may limit the ability to do many daily activities. For example, a person with low vision may be able to read their morning newspaper but not the bus sign on the street corner. They may be able to see crumbs or a coffee stain on the kitchen counter but not dirt on the kitchen floor. They may not have difficulty walking around, even in an unfamiliar place, but be unable to recognize a neighbor's face when passing her on the sidewalk.

As of 2019, approximately 27% of the US population over age 65 experience low vision level due to age-related changes in the eyes. Cataracts form, the quality of tears diminishes, less light reaches the back of the eye, and many other changes occur. Aging eyes need four times more light than younger eyes to see well enough to read, prepare meals, and get around. It takes longer for older eyes to adjust to extreme lighting changes, such as moving from bright sunlight into a darkened room. As our eyes age, it becomes more challenging to see an object of the same or similar color as the background upon which it sits.

The goal of this lesson is to provide strategies for maximizing functional vision and using it more efficiently. Keep in mind, functional vision does not necessarily correlate to the eye condition or the results of an acuity exam. Simply put, functional vision refers to how well a person uses their remaining vision as they perform daily tasks.

People often come up with techniques on their own for maximizing vision, such as using more light when reading or using natural light when doing crafts. It's important to experiment. Various options may help, and only you will know what will work best for you.

This lesson will focus on enhancing your remaining vision using low vision techniques and non-optical devices. Low vision non-optical devices include

reading stands, supplemental lighting, glare control sunglasses, typoscopes, and tactile locator dots. Non-optical devices are frequently used in combination with the low vision optical devices covered in lesson 8.

Lesson Goals

- Explain the term low vision device.
- Give examples for using lighting, size, and contrast.
- Describe how to use tracking and scanning when traveling outside.
- Describe the difference between visual closure and visual clutter.
- Give four tips you can use to practice eccentric viewing.

Low Vision Techniques and Non-Optical Devices

The term low vision device appears throughout this lesson. A low vision device is anything that helps a person see better. A high-power magnifier, a small flashlight, or a black felt-tip pen used on white or light-colored paper all meet this definition of a low vision device. They can be electronic devices, apps on a smartphone, or a brightly colored label to help identify an object. There are numerous types of low vision devices. Think about what items you use every day, which help you to do tasks. Chances are that you are already using quite a few.

In addition to devices, there are numerous techniques people with low vision can utilize to maximize their vision and adapt to visual difficulties. Several of them will be discussed in this lesson. Some of these techniques are easy to implement and start using immediately, and others, such as eccentric viewing, take practice and are developed over time. Which methods will be helpful will depend on the type and severity of vision loss. Three basic techniques that can maximize vision for most visually impaired people include lighting, text size, and contrast.

Lighting

There are three basic types of lighting: ambient, task, and natural. Ambient light is found in all homes and businesses, providing general lighting for people to get around and perform their jobs and daily activities. This lighting type is usually located in the ceiling or a lamp on a table with a

shade that often directs the light down toward the table or up toward the ceiling.

There are several considerations with ambient lighting. The type of bulb and brightness is just as important as the placement of the lighting. Many people with visual impairments have preferences regarding the color of light, and it is not uncommon for lighting preferences to change over time with fluctuations in vision. It is often recommended to use a lighting system that is variable to accommodate those fluctuations. This may mean having dimmers on all lights or using a smart lighting system, which allows for the color and brightness to be changed with a voice command or tap on the app.

Simple modifications such as a translucent lamp shade can improve lighting in a room by spreading the lamp's light. The location of lighting may make a significant difference. Many people with light sensitivity will do better with overhead lighting than mid-level lighting, such as table lamps. The most important thing to keep in mind with ambient lighting is that it should help a person navigate their environment more easily, not further impair their vision.

Many people with usable vision prefer using natural light when possible. For those who see best in natural light, this should be maximized by arranging furniture and window shades to allow the most light in the room. Most people prefer to read or work a crossword puzzle with window light over the shoulder of their better eye rather than to face the window. Some people can see better working at their desks near a window where filtered natural light can illuminate their work. The only downside to using natural light is the inability to control it. It will be vital to have an effective alternative in place, so the ability to do tasks is not limited to sunny afternoons.

Task lighting is designed for specific tasks or used for specific tasks due to the design. The light can be focused directly on the task. What will help depends on the amount and type of light and an individual's type and severity of vision loss. Forms of task lights include gooseneck lamps, desk lamps, reading lights, headlamps, flashlights, under cabinet lights, and

snake lights. A snake light has a long, bendable neck that can wrap around something like a pipe under a dark sink, leaving your hands free to work on a leaky pipe. A tube light attached under a kitchen cabinet shines directly on the counter or workspace, eliminating shadows from ceiling lights. It allows a person to use their limited vision in addition to their other senses to prepare meals. A similar light above the washer and dryer may make it easier to measure detergent and set the dials. A small flashlight can illuminate a door keyhole at night, making it easier to insert the key. In a darkened restaurant, the same flashlight may make it possible to read the menu, especially if it is in large print.

Light can be beneficial, but there are also times when light can be a problem, especially if a person's eyes are sensitive. A shiny surface and bright light can create glare anywhere. Ceiling light and natural light can create glare on shiny floors, which can hinder mobility. Adding heavy, sheer curtains to a window or door may reduce glare while letting in just enough light to help navigate. A tablecloth can be used on shiny surfaces such as the dining room table, kitchen table, or desk to fix the glare problem. If none of these suggestions to change the environment can be used, people can try wearing sunglasses or visors indoors.

Text Size
Increasing the size of the text for reading sounds like an easy accommodation to make. Some public libraries have large print books for loan. The National Library for the Blind and Print Disabled, also known as the Talking Book Library, may have fiction and non-fiction books in large print. Large print crossword puzzle books and books on hobbies like knitting and crocheting can be found online or at bookstores. Medications are essential items to identify easily, and large print is an option that can be requested from the pharmacy. People can make large print labels for important file folders, canned goods, seasonings, and other household items. Use a pen with a wider point to make the writing bolder. People who like playing cards, bingo, or other games can purchase them in large print. Some companies that carry these items include MaxiAids and LS&S Products. Computers and many smartphones come equipped with

magnification programs that will enlarge the print.

The size of displayed or printed text can make a difference when reading. Making the letters larger or bolder, or changing the font if you are using a computer, can make text easier to read. See Lesson 19 for more information on the accessibility of smartphones and computers. Some fonts are easier to read than others. Computer fonts that are best for most people are basic block styles such as Times New Roman, Verdana, and Arial.

Before purchasing an optical device for reading, try these non-optical low vision techniques and devices:

- Adjust the distance between your eyes and the material you are reading. If you are in the habit of holding your reading material approximately 14 inches from your eyes, try moving the material closer to your eyes to see if that helps.
- Use a tinted plastic line marker, which comes in various colors like yellow and pink. The color will dampen the white of the page, which may darken the print and make it stand out. These colored strips have various names, but if you Google "Eye Lighter Reading Strips," you will find various types, including Guided Reading Strips and the Learning Loft Eye Lighter.
- Place a dark ruler, preferably black or dark blue, under a line of print. The ruler will highlight the line of print and make it easier to follow. At the end of each line, move the ruler to the next line.
- Create a "reading window" (typoscope) out of a piece of dark-colored construction paper. Cut an opening the width of a line of print and the approximate length of a line in a book out of a half-sheet of construction paper. When you frame the line of print inside the "window," the print will appear larger because everything else is blocked out.

Contrast
People with visual impairments often need high contrast to see things clearly and may have difficulty distinguishing colors. This is important to

keep in mind with reading or locating items, but it can also impact how easy it is to do basic daily activities. The level of vision loss and condition will impact the severity of the problem with color and contrast. For example, if someone drops an object of the same color as the floor, it will be hard to locate visually. If a magazine article has blue font on a grey background, it may be difficult or impossible to read. Things with prints or patterns of varying colors, such as bedspreads or countertops, may be challenging to use because items get camouflaged because of lack of contrast. The same problem may occur with monochromatic color schemes in furniture and paint.

However, there are simple fixes for most of these problems to increase contrast and maximize vision. There's no need to throw things out or completely redecorate. Start by considering which items in the home are challenging to see due to low contrast. If there's a chair that is a similar color as the carpet, placing a pillow or throw blanket in a contrasting color can make it stand out and no longer be a hazard. If it's hard to see dropped items on a granite countertop, working over trays in contrasting colors can be used to complete tasks to prevent problems.

Using high contrast for everyday tasks will make things easier. Think about pouring coffee into a white mug rather than a dark color. Chances are it will be easier to see how full it is and prevent overflowing. People often will have different color cutting boards, so make sure to use a dark color when cutting light-colored foods like onions and a light-colored cutting board with darker foods like tomatoes.

Contrasting colors can also be used in layers. It is not uncommon for people to layer colors to increase visibility. A good example of this would be if you have light-colored foods like baked chicken and rice for dinner to pick a dark plate setting. Then set the plate on a light-colored placemat on the dark brown table. This makes the table, placemat, plate, and food all stand out with high contrast.

High contrast can also be used for safety around the home. Stairs are an excellent example of this concept. Marking the edges of the steps in a

contrasting color, adding an extra handrail in a contrasting color, and eliminating shadows caused by ceiling lights will make the steps easier to see. Similar adjustments to the steps leading up to the front and back doors can also be made.

Eccentric Viewing

Some low vision specialists have described eccentric viewing as the most essential visual technique for someone with age-related macular degeneration (AMD). People who have AMD describe their vision as having a blurry or blind spot in the center that affects vision when looking straight ahead. While reading across a page, letters or possibly even words fade or disappear. With AMD, details are blurry, colors may blend, and faces may be unrecognizable.

Eccentric viewing can help with some of these problems. It uses peripheral vision to work around the blurry areas and focus on objects or words. With proper training, regular practice, and proper adjustments, the peripheral vision can take over what the central vision normally does. The training begins by covering one eye and focusing on a single object. Move the eye slightly above and below and to the object's left and right until finding the place in your vision where the object can be seen most clearly. Next, try the same with the other eye. Note that the best position for each eye will likely not be the same. Usually, there is a better or dominant eye, which most individuals choose to use. Many low vision professionals, clinicians, therapists, and some OTs can help an individual determine the best viewing position and learn how to use it efficiently.

Training in eccentric viewing will not improve vision, and it does not provide the level of detail as is possible with central vision. However, functional vision can be maximized when eccentric viewing is combined with text enlargement for reading, enhanced contrast for performing a task, and appropriate magnification devices. The reading ability level that can be reached will be determined mainly by your vision and dedicating time to practice.

It's recommended to get professional training in eccentric viewing from a

low vision therapist. The training can usually be completed in about six visits. Contact your eye care physician, a low vision specialist, or a rehabilitation center to find training.

Even when you are getting training from a low vision therapist, home practice is important for getting the most from the training and speeding up the progress.

Some tips for getting started include:

- Practice daily at home.
- Move your eyes, not your head, to find your best vision area.
- Start by looking at objects while sitting down and sitting still.
- Instead of moving your eyes across a page when reading, move the page across the best vision area.

Visual Closure

Visual closure is the ability to identify an object, picture, word, or even another person when only a part or parts can be seen. When a person's vision isn't clear enough to see details or their peripheral or side vision is limited, clues such as color, size, shape, and location can provide enough information to make an informed guess or trustworthy identification. For example, when looking for a can of tomato soup in the pantry, visual closure can be used. You pick up a can in the pantry. It's the right size for a can of soup. The top of the label is red, and the bottom is white. The letters on the bottom are bold and black and stand out against the white background. You locate the beginning of the word and figure out it begins with a T. You know you did not buy any other kind of soup that starts with the letter T, so you know you have the can of tomato soup.

Another situation where visual closure may help identify items in the mail by the logos on the envelopes. Think of other examples where visual closure is used regularly. People often identify items by a general shape or color without looking to verify what it is by the label or details.

This technique can also be used to identify people. For example, let's say you are waiting for your son. You see someone walking toward you. The

person is tall, has no hair, is wearing a dark shirt and lighter pants, and swings his arms. Even though the image is blurred, you are quite certain it's your son because he is tall, bald, always swings his arms when he walks, and he told you he was wearing a dark shirt.

Visual Clutter

Visual clutter is the inability to see or identify a specific item amid a bunch of items. An example is having trouble locating a watch amidst other jewelry pieces or finding a wallet when other things are scattered on the top of the dresser. Another way of defining this visual difficulty is the inability to see a specific item against a busy background, such as keys against the floral bedspread or peas on a patterned dinner plate. Decluttering the environment and using high contrast colors can assist with visual clutter. Also, putting essential items like keys, watches, phones, and other essentials in the same place every time can prevent the frustration of needing to search for them.

Tracking

Tracking is used in lots of situations for both near and distance activities. One definition of tracking is the ability to visually follow a moving object by moving your eyes or turning your head while moving or standing still. One near-vision example is visually following a pen as you write a note or sign your name on a credit card slip. A distance-vision example is visually following traffic as it moves through an intersection. A second definition is the ability to visually follow a stationary line, such as when reading line by line in a book or following the grass edge of a sidewalk to find an intersecting sidewalk. Tracking can be a useful technique to use, especially for people with peripheral vision loss. This may take practice to do well with limited vision but is beneficial to learn.

Scanning

Scanning is the ability to locate a specific object by moving the eyes and head in an organized pattern until the object is found. It is important to use an organized pattern with this technique for it to be effective. It's easy to miss seeing an object by just an inch or two if you first look to your right and then look to your left and all around. It is better to look for the object by

scanning the area from one side to another until your eyes have covered the entire area. For example, if you are looking for your phone on your desk, you might miss it if you don't search the desk's entire surface with your eyes.

This approach to scanning should be used for both near and distance tasks. Near tasks could include finding the buttons on the coffee maker or dials on the washing machine. Use the same technique when looking for a name on a list or a subheading in a book.

When scanning for something in the distance, it may be preferable to use an optical device called a monocular. This is a small telescope that is described in the next lesson. If you are looking for a bus sign at the end of a block, whether you use only your vision or use a small telescope, you will still use tracking, scanning, and visual closure skills. You might scan the distance looking for a pole, then visually track along the curb or grass edge until you get close to the pole. You then have the option to track up the pole with your eyes or the telescope and scan the sign.

Light-Dark Adaptation
It is common with a vision loss to have difficulty adjusting to extreme changes in light level. Someone with normal vision will adjust more quickly when entering a dimly lit movie theater than someone with a visual impairment. This condition is common for people with diabetic retinopathy, glaucoma, and Retinitis Pigmentosa. Many older people with visual impairments require more light than they did previously to perform many everyday activities. There are techniques and devices which may help with this problem. If you experience difficulty with adapting to changes in light regularly, try the following suggestions. When outside in daylight, always wear the darkest sunglasses you safely can. The dark lenses will force your pupils to remain open in ordinary daylight, reducing the amount of time your eyes will need to adjust when you enter a building. When you are by yourself and not using a guide, plan time for your eyes to adjust. For example, when possible, sit down on a chair or bench and wait until your eyes have adapted to the lighting.

Another condition with similar characteristics to light-dark adaptation is called night blindness. An individual with night blindness has difficulty seeing at night and in dimly lit environments. This can be to varying degrees. Some people with night blindness can still see some items, and for others, it is entirely dark. Depending on the environment and the level of night blindness, different adaptations can be used. For inside the home, lights can be placed at various locations along pathways that can be illuminated as a person walks past. Keeping flashlights close by can also be helpful. For individuals with severe night blindness, the human guide technique, a cane, or other mobility aid will need to be used outside the home for safety and independence.

Summary

This lesson provided an overview of low vision devices and techniques. It is important to experiment with these suggestions to determine what works best. Everyone is different, and how they see it will fluctuate drastically. Start with some of the basic techniques and adaptive devices that you already have around the house to see what a difference they make in your daily life.

Suggested Activities

Try some of the following activities to help understand and use low vision devices and techniques.

- Identify areas of the home that are difficult to navigate and use lighting and high contrast concepts to improve them.
- Experiment with different sizes and styles of a font to see if you can read any comfortably.
- Practice the scanning technique to locate an item to help you find an organized pattern that is effective for you.

Resources

To find large and bold print items such as games, calendars, and check registers, check the following companies:

- MaxiAids
- LS&S Products
- Independent Living Aids