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Practice Report

Resources for Adapting Low Vision Training Materials for the Adult with Low Literacy Skills

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Adults with low vision who seek clinical low vision services need to be able to read (that is, to interpret or understand words, numbers, and symbols in print meaningfully). Reading difficulties that adults encounter during low vision therapy may be directly connected to a visual impairment or may be related to other reading problems, such as lifelong learning disabilities, literacy deficiencies, or cognitive loss. Visual problems experienced by readers with low vision who have central vision loss may be similar to those of a person with low literacy ability (Freeman & Jose, 1991). These problems include the inability to see all the words, skipping words or lines of print, and frustration.

According to Doak, Doak, and Root (1985, p. 30), the functionally illiterate person "lacks the basic reading skills necessary to cope with the requirements of adult

life." They also noted that grades completed in school cannot be used to make assumptions about literacy because educational achievement does not necessarily equate with grade placement, and skills may diminish through disuse.

The low vision therapist typically does not teach reading a visual code. Rather, he or she may provide training in compensatory skills for the mechanical use of a device for reading at the person's current level and provide adaptable materials and practical tasks of everyday living to enhance the person's functional literacy.

Formal reading assessments and materials

A formal reading assessment is typically not performed in a low vision rehabilitation clinic when time limitations are imposed. However, when available, the results of a formal oral reading assessment may indicate a person's reading level. Reading level assessment information may provide the therapist with a baseline for selecting appropriate reading materials to use in visual enhancement training. Informally, an appropriate reading test may be used as a word list or passage to begin training with optical equipment. Local and national literacy organizations may be contacted to identify and locate assessment or instructional materials. The following are a few sources of published assessments.

Slosson Oral Reading Test—Revised (SORT-R3)

SORT-R (Nicholson, 1994), a 3–5-minute screening measure of reading word recognition for students and adults, is available in three print sizes (24, 18, or 16 point) and with new options in braille. The 200 words are organized in 10 groups that approximate reading-grade levels. Scoring includes grade and age equivalents, national percentiles, standard scores, *t*-scores, and stanines.

Gray Oral Reading Tests, Fourth Edition (GORT-4)

The GORT-4 (Wiederholt & Bryant, 1992) is a 20–30-minute oral test of decoding skills, reading accuracy, reading rate, and reading comprehension. Scores are reported as standard scores, percentile ranks, grade equivalents, and age equivalents.

Morgan Low Vision Reading Comprehension Assessment

This 18-sentence, 10-minute test (Watson, Wright, & De l'Aune, 1996) is designed for use with adults with low vision who have macular loss. Although it is a measure of reading comprehension, it may also be used to determine an approximate reading level of appropriate materials.

Dolch sight words

This sight-reading program, *Dolch Beginning and Remedial Reading* (Dolch & Dolch, n.d.), is for grade levels 1–3. The words are the 220 most frequently found words in books read by children. These word lists are studied in the beginning reading programs. Many of the words cannot be sounded out because they do not follow decoding rules, so they must be learned as sight words. There are several Internet sites and links to published or teacher-created materials, such as the following: <www.sraonline.com/index.php/home/curriculumsolutions/reading/dolch/86> and <www.theschoolbell.com/Links/Dolch/Dolch.html>.

Readability

Wright and Watson (1991) presented the concepts of reading levels and the use of readability formulas to organize materials in an appropriate sequence for successful outcomes in low vision training with adult readers with low vision. The standard system of leveling materials with educational grade is based on structure (word and sentence length), rather than on content. It can be beneficial for organizing reading materials from easy to difficult with a gradual increase of word and sentence length. Through the thoughtful selection of low vision training samples with reduced word and sentence lengths, the therapist may reduce the initial frustration and increase comprehension of

the reader who is practicing new skills with optical devices.

Wright and Watson (1991) described in detail two readability formulas that are appropriate for adults with low vision. The New Fog Count can be used for long passages and may be adapted for single sentences of any length. It is simple to calculate, requires no special equipment, and is suitable when instructional time is limited. The easy-to-use Gunning Fox Index formula involves computations and must have a sample of at least 100 words.

The readability level of a passage may be checked using the Klesch-Kincaid Reading Level that is built into the newer versions of Microsoft Word and Word XP. To display the readability statistics of a document with the appropriate word-processing software, take the following steps: (1) On the Tools menu, click Options and then the Spelling and Grammar tab; (2) select the "show readability statistics" check box and click OK; (3) on the Tools menu, click Spelling and Grammar. When Microsoft Word finishes checking spelling and grammar, it displays information about the reading level of the document.

Edward Fry created and published in 1977 a graph to determine the readability (approximate grade level) of a written passage. The Fry Readability Graph (cited in Schrock, 2004) and directions for its use are available for retrieval on the web site <www.school.discovery.

com/schrockguide/fry/fry.html>.

Doak et al. (1985) estimated that there were over 40 possible formulas to determine readability. They presented two for determining the degree of difficulty of reading materials: the SMOG testing formula and the Fry readability formula. The SMOG formula, originally developed in 1969, predicted the grade-level difficulty of a passage within 1.5 grades in 68% of the passages tested (Doak et al., 1985). Doak et al. considered the Fry formula to be easy to use and a more accurate measure of readability than the SMOG formula.

Schrock (2004) suggested the computer programs Readability Calculations and Vocabulary Assessor (n. d.) in Readability Plus (n.d.), a package available in versions for Windows and Macintosh. Readability Calculations (n.d.) indicates the appropriate grade level of written text and supports the readability formulas for Dale-Chall, Fry, Flesch Grade Level, Flesch Reading Ease, FOG, SMOG, FORCAST, Powers-Somner-Kearl, and Spache. Vocabulary Assessor identifies words in the text that are likely to be the most troublesome for the intended reader. For additional information, see Readability Plus (n.d.).

High Interest-Low Readability Materials

Fun, short, and simple reading materials can motivate

and encourage a reader to practice and develop skills. Companies publish reading materials that are designed to engage a range of educational or age levels, including young and mature adults. Reading specialists and publishers use the term *high-interest–low-readability materials* to describe commercially produced literature created at lower reading levels with satisfying and mature content for adult readers. Information and catalogs are available from distributors.

Sources

Jamestown Education, P.O. Box 543, Blacklick, OH, 43004; phone: 800-334-7344; web sites: <www.jamestowneducation.com> and <www.glencoe.com>. Materials for adult education and K–12 education.

Harcourt Achieve, Rigby & Steck-Vaughn, P.O. Box 690789, Orlando, FL, 32819; phone: 800-531-5015; web site: <www.harcourtachieve.com>. Materials for multiple reading topics, including high-interest low-level reading.

New Readers Press, 1320 Jamesville Avenue, Syracuse, NY, 13210; phone: 800-448-8878; web sites: <www.proliteracy.org> and <www.news-for-you.com/index_h.html>. Materials for adults and older teenagers at the levels of basic literacy through the general equivalency diploma (reading levels 0–9), those with learning disabilities and learning difficulties, and

English as a Second Language students. Publisher of *News for You* (various years), an easy-to-read weekly newspaper written in plain English for adults and young adults.

SRA/McGraw-Hill, 220 East Danieldale Road, Desoto, TX 75155; phone: 888-772-4543 or 800-201-7103; web site: <www.sraonline.com>. The SRA Reading Laboratories (see Science Research Associates, 1973; 1985) provide a range of reading levels to improve reading skills. These materials provide supplemental practice in phonics, decodable text, time reading/ fluency, comprehension, vocabulary, test preparation, and literature.

Additional materials

Reardon, Stachura, Schuckers, Grimm, and Johnson (1993) developed and field-tested printed instructional pamphlets on diabetes survival skills. The format targets individuals with low literacy, low vision, or both by using enlarged print for third-grade-level text with pictures to aid those who have limited word-recognition reading ability. The series includes the topics of low blood sugar, foot care, walking, and awareness of food content (fat, sugar, salt, and fiber). For additional information or the pamphlets, contact: Jenny M. Grimm, Medical College of Georgia, Augusta, GA; e-mail: <jgrimm@mail.mcg.edu>.

Freeman and Jose (1991) offered low vision reading

exercises in three typed print sizes (16, 12, and 8 point). Letters and words were arranged for reading across lines of print and for reading down columns. As stated on the book's copyright page, the numbered forms and exercises may be photocopied in small numbers for private practice usage. These low vision reading exercises resemble the out-of-print Quillman reading exercises (Quillman, 1980)—reading practice sheets that progress from single letters, to two-letter words, to multiple-letter words, to sentences. The reading practice pages were printed in large to regular print (3M, 2M, 1.5M, and 1.0M).

Learn to Use Your Vision for Reading Workbook (Wright & Watson, 1995) contains field-tested assessment and training materials that are designed to improve the reading skills of people with low vision and macular loss. Exercises are included to improve eccentric viewing, maintain visual fixation, enhance scanning techniques, build cognition and comprehension skills for reading, and practice combining visual and cognitive skills. The visual training activities are divided into five sections according to descending print size (3M, 2M, 1.5M, 1M, and 0.8M). This material (an instructor's manual and a reader's workbook) is part of the LUV Reading Series and is distributed by Lighthouse International (see Wright & Watson, 1995).

The ProLiteracy Worldwide Internet web site <www. proliteracy.org/resources.asp> provides a list of links

to more than 25 literacy/adult education web site resources.

Life experience activity application

The low vision therapist considers the adult reader's current abilities when establishing realistic goals for low vision rehabilitation. He or she selects near (within 16 inches or 40 cm), intermediate (16 inches to 3 feet or at arm's length), or distance (beyond 3 feet or beyond arm's reach) tasks with simple readability appropriate for the person who is to be trained to use an optical device. If the initial assessment implies low proficiency with continuous text print, training begins with selected materials or targets that are adjusted for efficient spot reading. Low vision training incorporates the development of relevant visual skills (alignment, localization, fixation, spotting, tracing, scanning, or tracking) with techniques for the practical use of a device for functional reading or writing needs in daily life. The following are examples of common life activities for training in the use of optical devices.

Photographs. A near-magnification device is used to identify faces or objects in familiar photographs. Magazines or pictorial books are explored to identify or describe objects viewed with a device.

Paper currency. A near- or intermediate-distance magnification device is used to read the large numbers

on paper money. If the person is unable to verbalize what is seen, money of the same value can be matched or grouped together to indicate accurate visual recognition.

Watch: wrist or pocket style. A near-magnification device is used to identify numerals on time-keeping devices. The time display may be either a hands-and-dial face with numbers from 1 to 12 or a digital display of multiple numbers from 1 to 59. A liquid crystal display may or may not provide enough color contrast for accurate reading.

Thermostat. A near-magnification device or an extra-close-focus telescopic device may be used to read thermostats. A thermostat for the interior room temperature may have a dial with a range of numbers and a pointer arrow or may provide a numeric digital display.

Calendar. Enlarged print or near magnification or both may be used to read the basic information on a calendar, such as the numbers, days of the week, and months of the year. Details of photographs or artwork on calendar pages may be verbally described.

Bingo game card. A bingo game card contains five letters (B, I, N, G, and O) that are individually positioned at the top of five vertical columns of one- or two-digit numbers. Large-print cards may be used. Visual scanning techniques with or without a

magnification device can be practiced with a card to identify numbers and letters that are randomly called.

Telephone number list. A near reading device may be used to identify a series of numbers and possibly to recognize names that the reader knows.

Envelope address. A near reading device may be used to verify one's name and address on the envelope and to read a business name on an envelope.

Signature on a bank check. An appropriate device, such as a signature guide, may be used to locate the signature line and write a signature.

Playing cards. A near- or intermediate-distance magnification device may be used in training with playing cards. Decks of game cards differ in symbols, pictures, colors, or numbers on the card faces. Children's card games and some standard decks of cards are available in enlarged print. Determine if the person with low vision can correctly identify the colors presented on the cards, especially if color recognition is necessary for a favorite game. Many card or table games combine the use of vision to see close up and to view the game pieces or cards at arm's reach on the tabletop.

Paint by numbers. Painting by numbers requires the accurate recognition of numbers on the canvas or paper and the visual interpretation of the color-coded key.

The consumer may need to explore the use of a hands-free magnification device and task illumination if he or she wants to continue to paint at home.

Puzzle page. The use of a near or intermediate device to spot read and handwrite can be practiced with simple puzzle pages. A connect-a-dot puzzle requires the viewer to read and scan to follow numbers in a chronological sequence that form a picture when drawn by the connection of the dots. A maze puzzle sheet requires the viewer to see mazes with openings and dead-ends along the path from the beginning to the end. Commercially available word-search puzzles may be found with appropriate readability for individuals. Such pen-and-paper puzzles involve visual skills of locating, scanning, and tracking (the moving pen).

Food list. A near device may be used to spot read familiar printed words for a food shopping list or a diet plan.

Food package identification label. A near device may be used to view a food package label to discern the contents by looking at the printed words, logo, or picture.

Music or video label. A near device may be used to spot read labels on music or a videotape, including recorded books on tape. If the printed titles cannot be interpreted, the user may be able to see markings to determine Side 1 or Side 2.

Numbers on bill statements. A near reading device may be used to locate and identify the amount due and the due date. The person needs to be able to read those specific words in order to discriminate them from other amounts and dates on the bill statement.

Child's storybook. The use of a near device to read a book to a child may be a motivation to achieve in training and independent practice. Shared reading creates a bond between a child and an adult. Stories for young children use repeated and often-predictable language patterns. Children's literature may appeal to adults through captivating story lines, nature themes, and the inclusion of adult characters. A readability level is often printed somewhere on a book for young readers. The book lists for the accelerated reader program are organized by reading levels and may be available at a local school. Public libraries may also group books by reading level for children.

Television (TV) channel number and program details. An appropriate distance telescopic system may be used to access details on the TV screen. Lower or mute the TV volume to reduce auditory clues when initially practicing skills with the device. Faces and characters may be identifiable by name or program title. Current event-news programs, talk shows, action sports channels, a game show, and reruns of a well-known TV series will have action that can be described by older adult viewers who enjoy television. A VCR player with recorded programs (various short

segments) will facilitate the selection of options by the therapist within the limited time available for training. Many TVs are equipped with the channel number visible on or near the screen while the television is in operation. Such channel numbers are practical targets to identify when size, color, and background contrast are suitable for the viewer.

Clock. A telescopic device may be used to locate the hands on the face of a wall or mantle clock and determine the time. Once the positions of the clock hands are determined, then the actual time may be read or the time may be estimated by the blurred interpretation of the hand positions.

Indoor signage. A telescopic device may be used to spot and read signs on walls or mounted overhead. It is advisable to identify appropriate signage in advance of training sessions. Such signage could be a wall-mounted menu board in a fast-food restaurant; overhead aisle signs in a store; or directional signs that may be followed to reach a specific clinic, office, or public area (such as a rest room, dining room, elevator, or lobby).

Outdoor thermometer. A low vision telescopic device may be used to read numbers on outdoor thermometers that have appropriate visual contrast. Large outdoor time and temperature displays may be good targets to practice the use of such a device.

Getting started

A starting point is to begin to obtain a few materials for low vocabulary reading and testing. Free or purchasable materials are available through sources cited elsewhere in this article. Using the word lists cited, create simple phrases or sentences and check the readability level with a method also mentioned in this article. Make time to survey the training environment to analyze it for potential life-application elements for future use.

Demonstrate respect and trustworthiness by maintaining the student's or client's confidentiality and privacy in the assessment and training environments. Some people are sensitive about their special problems, are uncomfortable with onlookers, and may withdraw to conceal personal functional difficulties. Patience is fundamental for both the therapist and consumer in situations in which extended time is needed to interpret what is seen when learning to use low vision devices.

The time available for the first low vision session may be too limited to begin lengthy formal reading tests to determine someone's reading level. An alternative is to informally use word lists from reading assessments as the initial reading material for instruction with a new low vision device. The therapist will need to discern if such an adaptation is appropriate for the person with low vision. The incorporation of a refractive correction may be indicated, especially if a bifocal is beneficial

for close focus with or without an optical device. Try the person's eyeglasses or the newly prescribed optical correction in a trial frame during the training session.

In preparation for the treatment plan, the low vision therapist may guide the consumer toward realistic goals and specific tasks for the practical use of reading or writing skills in daily life. The person with low vision should be aware of the relationship of the training activities to his or her personal goals.

The qualities of printed materials that affect ease of reading include the size of print, spacing, font style, and contrast. Choose the appropriate print size (based on the results of the initial acuity testing) and provide training materials to proceed from the simplest to the most complex that is realistic. The strategy in the clinic may be to enable the consumer ultimately to access regular print with a low vision device. In most cases, it is advisable to start with large print and work toward smaller print. If materials are not available in large-print formats, regular-print items can be enlarged with a photocopier machine. Large print can be created on a personal computer and printed in various font sizes to match the need. To convert the type size of print to M notation, the following conversion formula may be used: Point size/8 = M (approximately) (Freeman & Jose, 1991).

Doak et al. (1985) recommended the use of reading materials in typed lowercase print for the person with

low literacy skills. They added that many people with low literacy skills cannot read or have difficulty with all capital letters, italics, script, fancy typefaces, and handwriting. Those difficulties parallel reading problems that have been observed among adults with low vision who have good literacy skills. Watson and Berg (1983) wrote that the easiest print material for a person with low vision has good spacing between the lines and good density. Although sans serif type styles with bold face or regular face may be easier to read, the reality is that we encounter different type styles in everyday life. This fact adds to the complexity of reading for the person with low vision and low literacy function.

The local adult literacy center or organization may be a resource for assistance in locating and borrowing assessment and instructional materials that have been successfully used with adults. Sources for free or low-cost materials and information include local educational and university libraries and Internet web sites. The following are examples of web sites with practice activities that include high-frequency words: <www.theschoolbell.com/Links/Dolch/Dolch.html>, <www.literacyconnections.com>, and <www. literacyconnections.com/Dolch.html>.

Alternative literacy tools (such as a sighted reader or audiotape) may be needed if the person is not efficient in using a device for the task or if the goals cannot be met with low vision reading equipment. Nonvisual

media that are available include audiotaped materials, synthetic speech produced on computers, sighted readers, and technology. Doak et al. (1985) suggested that some people with low literacy skills may not comprehend an audio message because of the lack of language or thinking skills needed to process complex and abstract ideas presented in any media. The person with low vision may need a referral for training in the use of safe and efficient adaptive techniques with a rehabilitation teacher, an orientation and mobility instructor, a rehabilitation counselor, or a combination of blind rehabilitation services available to enhance one's quality of life.

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