

## Skill Council for Persons with Disability Expository for Low Vision (Visual Impairment) E003

### Definition

**According to The Rights of Persons with Disabilities Act, 2016 Low Vision defined as:**

**Low-Vision"** means a condition where a person has any of the following conditions, namely:

- (a) visual acuity not exceeding 6/18 or less than 20/60 up to 3/60 or up to 10/200 (Snellen) in the better eye with best possible corrections; or
- (b) limitation of the field of vision subtending an angle of less than 40 degree up to 10 degrees.

### Training Tools

Training Tools mentioned below, are Accessible Tools/Appliances/Software, which enables a Person with Disability (PWD) to carry out their training corresponding to the National Occupational Standards (NOS) of the Qualification Pack. While the learning outcomes from the Qualification Pack will remain the same, the methodology stated below will assist the trainers to train the trainees in the best suitable way according to their level of functioning. These suggested training tools facilitate the learning process of a Person with Disability to perform at par with their peers in a conducive and enabling environment.

#### Tools recommended for the Training of Persons with Low Vision

Accessible Tools/Appliances/Software	When to use this tool	Tools Description	How to use this tool	Tool Names
Optical Character Recognition (OCR)	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing printed text, then he/she can use this tool.</p> <p>It is mandatory to use this tool for Persons with Low Vision</p>	OCR technology helps to convert the printed document into a soft copy through which a Person with Low Vision (LV) read the same.	The device may require a PC or laptop which runs on either Windows or Linux. Portable OCR systems are also available	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Clear View+ Speech</li> <li>• ZoomEx,</li> <li>• Kurzweil,</li> <li>• ABBY Fine Reader,</li> <li>• Tesseract</li> </ul>

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Screen Reader	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing printed text, then he/she can use this tool.</p> <p>A Person with Low Vision (LV) uses this tool when the printed text needs to be converted into audio format while using an e-device with a screen to read and write. For example, Laptop and Phone</p>	<p>A screen reader is an essential piece of software for a person with low vision. A screen reader transmits whatever text is displayed on the computer screen into audio. By listening to the audio a person with Low Vision (LV) can work on the computer independently.</p>	<p>The device is needed to be attached with an e-device.</p> <p>Requires a digital platform PC or laptop, or Mobile Phone</p>	<ul style="list-style-type: none"> <li>• Non-Visual Desktop Access (NVDA),</li> <li>• Job Access with Speech (JAWS),</li> <li>• System Access to Go (SATA GO)</li> <li>• Voiceover,</li> <li>• Talkback,</li> <li>• Nuance Talks and Mobile Speak,</li> <li>• ORCA</li> </ul>
Screen Magnifications	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is used when a Person with Low Vision (LV) needs to access text formats, graphics and images for reading and writing.</p>	<p>A screen magnifier is a software that interacts with a computer's graphical output to present enlarged screen content. It is a type of assistive technology suitable for Person with Low Vision (LV) with some functional vision.</p>	<p>Mostly comes pre-installed on computers or laptops or may be purchased and installed separately</p>	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Windows Magnifier</li> <li>• Magic Screen Magnification</li> <li>• Zoom Text</li> </ul>

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Screen Reader and Magnifier	<p>While teaching any of the NOS'S mentioned above, if it is seen that Person with Low Vision (LV) has difficulty in reading/seeing text fonts then he/she can use this tool.</p> <p>It is used when required to access the matter on screen in order to use in audio and magnified format simultaneously.</p>	<p>This tool helps in reading smaller words which are difficult for the eye to capture.</p>	<p>may be purchased and installed separately</p>	<ul style="list-style-type: none"> <li>• Supernova Screen Reader and Magnifier</li> <li>• Zoom Screen Magnifier</li> </ul>

<p>Accessible Format Digital System</p>	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is highly recommended for all degrees of visual impairment. it is used to read any content in soft form.</p>	<p>DAISY (Digital Accessible Information System), DAISY is an internationally recognised accessible multi-media publishing system, compatible with the World Wide Web. DAISY provides an enriched multimedia reading experience that is completely accessible and navigable</p> <p>DAISY offers text and audio synchronization. DAISY can support Braille output</p> <p>DAISY provides adjustable character display</p> <p>DAISY (Digital Accessible Information System), a software player that renders text, audio and embedded images for the Person with Low Vision (LV)</p> <p>DAISY facilitates navigation by chapter, section, subsection, and page. Readers can read or skip footnotes, sidebars, or information added specifically for users of the audio version.</p>	<p>Requires a PC or Laptop which runs on either Windows or Linux Inbuilt on a Windows system.</p> <p>Various desktop based or portable daisy players are available and Daisy books can be read using refreshable Braille display or screen reading software Printed Braille book on paper</p> <p>Converted to a talking book using synthesized voice</p> <p>Can read Printed text on paper like large print book</p> <p>Read large print text on computer screen</p>	<p>Any of the following tools may be used :</p> <ul style="list-style-type: none"> <li>• Digital Accessibility Information System (DAISY)</li> <li>• Standalone DAISY Players</li> <li>• Daisy player with Plectalk Vachak (Hindi TTS)</li> <li>• Angel India Pocket Talking Daisy Player</li> <li>• Computers using DAISY playback software such as AMIS</li> </ul>
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Ease of Access Center	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>The Ease of Access Center is a feature in Windows Vista and Windows 7 that provides an option to set up accessibility settings for programs available</p>	<p>Has many tools like on screen magnifier, color contrast (high contrast themes for color blind or Person with Low Vision (Visually Impaired), sticky keys, on-the screen keyboard, mouse pointer settings, speech recognition, etc.</p>	<p>Requires a PC or Laptop Inbuilt on a system with windows and there are accessibility options built in for Mac Computers</p>	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Screen Magnifier</li> <li>• Start On-Screen keyboard</li> <li>• Start Narrator</li> <li>• Voice over, hover text</li> </ul>
Video Magnifiers	<p>While teaching any of the NOS'S mentioned above, if it is seen that a person with low vision has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is recommended for Person with Low Vision (LV) who have functional vision to read documents of 3-4 pages. It is used to magnify the object with an additional benefit to create contrast in colors.</p>	<p>A video magnifier has device a video camera to display a magnified image on its display. Video Magnifiers are used by Person with Low Vision (Visually Impaired) to help with reading and writing difficulties caused by visually impaired.</p>	<p>Can be low vision reading glasses or Hand held device or video camera magnifiers</p>	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Onyx</li> <li>• Topaz</li> <li>• Prisma</li> <li>• Optelec Clear View</li> </ul>

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Adapted Key Board in Colour Contrast	While teaching any of the NOS's mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.	This aid is useful for person with Low Vision (Visually Impaired) as there is contrast in colour and large keys.	An adaptive keyboard is a commercial keyboard[] that has] been modified to allow a user with special needs accessibility to their computer system. Modifications could include: bright colored keyboard, easy-to-read labels, QWERTY or ABC layouts, and customized overlays. Stickers can also be used to modify the standard keyboards	<ul style="list-style-type: none"> <li>• ergonomic keyboards</li> <li>• separate numeric keypads</li> <li>• keyboards with larger keys</li> <li>• high-contrast keyboards</li> <li>• more specialist keyboards – braille, chording and expanded devices</li> </ul>
Braille	While teaching any of the NOS's mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.	It is a tactile writing system used by the Person with Low Vision (LV) It is traditionally written with embossed paper. Braille-users can read and write Braille with the Braille slates and stylus. Braille script can be written in all the languages.	Braille slates and stylus. The person should know Braille	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• German Braille Slate with Stylus</li> </ul>

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Electronic Braille Embossers	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>This tool may also be used by the Trainer to create embossed study material for trainees</p>	Hardware printer used to print Braille books and other materials in Braille.	These are Attached to a computer with the screen reading software.	<ul style="list-style-type: none"> <li>•Signature Guide</li> <li>•Abacus</li> <li>•Braille Rule</li> <li>•Braille Geometrical Device</li> <li>•Taylor Frame (Small &amp; Big)</li> <li>•Pocket Frame &amp; Stylus (5 lines and 7 lines)</li> <li>•Braille Note taker</li> </ul>
Refreshable Braille Display	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>The tools can be recommended on a case-to-case basis</p>	<p>Braille displays enable persons who are blind/low vision or deaf-blind to operate any computer.</p> <p>It is used for taking notes on Braille without paper usage.</p>	Refreshable Braille Displays are electronic devices that are used to read text that a computer sends to the monitor. The device is connected to the computer by a serial cable and produces Braille output on the Braille display. Refreshable Braille displays only read one line of text at a time.	Focus 40/80Seika

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Handheld Magnifier General Magnifier	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is recommended for those who have functional vision to read minimal text. It helps in reading and writing by magnifying objects.</p>	<p>It is Convex lens that is used to produce a magnified image of an object.</p> <p>It helps a Person with Low Vision (Visually Impaired) to see magnified images/written materials.</p>	<p>One has to get used to holding the reading material much closer to your eyes than before. Reading at this very close distance may be uncomfortable but it won't cause vision problem to become worse. the closer the lens is to the eye, the more of the line will be seen. Much more light than before is required to read.</p>	<p>Hand Hel Magnifier</p> <p>Magnifier with stand</p> <p>Magnifying reading glasses</p> <p>Clip-on Loupes</p> <p>Tele microscopic Glasses</p>
E-Book Reader	<p>While teaching any of the NOS'S mentioned above, if it is observed that Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is recommended for all those, who have functional vision to read from computer screens. It helps them to read e-books in a magnified form.</p>	<p>Helps in reading books/magazines/newspapers with various options such as zoom and backlight.</p>	<p>Handheld E book reader</p>	<p>Kindle Paper White for I-Pad</p>



Accessible Tools/Appliances/Software	When to use this tool	Tools Description	How to use this tool	Tool Names
Smart Phone with Android/IOS Technology	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is most effective and accessible option to access info, It is recommended for all who are comfortable using touch phones.</p>	<p>Well known for its accessibility features such as talk back, good touch, zoom facility etc. They also provide clarity in view with its HD Displays.</p> <p>Helps in improving ones reading ability.</p>	<p>Android/IOS Technology is best known for accessibility for Persons with Low Vision (Visually Impaired)</p>	<p>Mobile phones with accessibility features for low vision</p>
Voice Recorder	<p>While teaching any of the NOS's mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is used during meetings, classes and conferences. It is recommended for all Person with Low Vision (LV), irrespective of their functional vision.</p>	<p>Equipped with facilities of long hour recording, data transfer into computer/laptop and talking facilities can be used for educational and employment purposes of persons with Low Vision (Visually Impaired).</p>	<p>Voice recording features on Handheld devices</p>	<p>Angel Player/i-Pods etc.</p>

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<p>Low Vision helping aids</p>	<p>While teaching any of the NOS'S mentioned above, if it is seen that a Person with Low Vision (LV) has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>Used for basic calculations, math and also used for doing signatures. It is recommended for all Persons with Low Vision (LV), irrespective of their functional vision.</p>	<p>Helps in solving basic mathematical problems, signing documents and cheque etc. in a defined area without any hassle.</p>	<p>Hand held devices</p>	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Talking calculator</li> <li>• Signature Guide</li> <li>• Wrist watch-Tata</li> </ul>
<p>Table Lamps</p>	<p>It can be recommended for all Persons with Low Vision (LV) who have good functional vision to read.</p>	<p>Good quality table lamps-with yellow and white light options.</p> <p>Contributes quality to the reading and writing needs of a Person with Low Vision (Visually Impaired) (central vision in place) to read print material.</p>	<p>Hand held Device, available locally.</p>	<p>General table lamp</p>

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Magnifying glass	<p>While teaching any of the NOS's mentioned above, if it is seen that a Person with low vision has difficulty in reading/seeing text formats, then he/she can use this tool.</p> <p>It is recommended for all Persons with Low Vision, who have good functional vision to read.</p>	It is a lens that produces an enlarged image.	Convex lens that is used to produce a magnified image of an object.	Technology is the tool
Keyboard	Can be used by Persons with Low Vision however this is not an essential tool needed for effective typing tasks.	Large Black Print on Yellow Keys.	Attached to a computer.	Technology is the tool

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Tactile Material	<p>While teaching any of the NOS's mentioned above, if it is seen that a Person with Low Vision has difficulty in seeing surroundings, then he/she can use this tool.</p> <p>It is used to create a 3D demo of a 2D image. It can be recommended on a case-by-case basis.</p>	<p>Tactile is used to get the visualization of the visuals (model or 3d images) by touch and feel. Tactile stickers or diagrams are used to get the visualization of things like computer screen or any outline by touch and feel. Tactile markers are also used to differentiate the things.</p>	<p>Needs to be prepared using locally available stickers or bindis and other materials.</p>	<p>Any of the following tools may be used:</p> <ul style="list-style-type: none"> <li>• Tactile diagrams,</li> <li>• Tactile stickers,</li> <li>• Tactile flooring,</li> <li>• Tactile marks to identify various things/ Devices/spots Bindi and other stickers used to provide tactile feeling to differentiate items.</li> </ul>
Stationery: registers, pens etc.	<p>While teaching any of the NOS's mentioned above, if it is seen that a Person with Low Vision has difficulty in reading/seeing text formats, then It can be recommended to all LV candidates irrespective of their degree of vision.</p>	<p>White Papers with thick black coloured lines so that distance between two lines can be identified easily, black sign pens could help in writing big font and with brightness.</p>	<p>This is the common stationary which can be adapted as per the need of the persons with low vision</p> <p>To be procured locally.</p>	<p>Common stationary items which can enhance reading or writing skills for persons with low vision like colour pens , highlighters white papers</p>

Activity	Activity Type	When to use Activity	Activity Description	How to use tool
Environmental Adaptability	Reading Notes for Reference	It can be recommended for all persons with low vision who have good functional vision to read.	Any reference material should be in bold and big font, above 20 generally for the reading of a person with Low Vision (Visually Impaired) (central vision in place)	May be adapted as per the need of the individual with low vision
	Surrounding level of light	It can be recommended to all persons with low vision irrespective of their degree of vision but may vary on a case to case basis.	There should be enough lighting provision everywhere including in lifts too, though modern lifts have the talking facility, the display board showing the numbers should be back lit in white with good contrast and big fonts of numbers of floor. Dim light makes it difficult for a Person with Low Vision to move in movie halls, restaurants, lifts, training rooms, conference rooms and all those places where there is no sun light.	Bulbs, tube lights can be purchased or switched on in case of buildings if available.
Environmental Ability	Enhanced contrast stickers	It can be recommended to all persons with low vision irrespective of their degree of vision.	Stickers which enhance black & white contrast used to assisting persons with contrast sensitivity deficit to identify home/ workplace obstacles.	Contrast color stickers available locally may be used

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	Floors	It can be recommended to all persons with low vision irrespective of their degree of vision but may vary on a case to case basis.	The floor in contrast could lead to independent movement of a Person with Low Vision (Visually Impaired). If we can provide a line on the floor leading to different directions in a different contrast than the floor colour, person with Low Vision (Visually Impaired) can reach different places following the line in contrast	Adaptation to be done on floors. e.g. tactile in metro stations with yellow with railing in the contrast.
Environmental Ability	Stair Cases & Ramps	It is recommended to all Persons with Low Vision irrespective of their degree of vision impairment but may vary on a case to case basis.	Stairs can be white in colour but the center part of the stairs can be painted in red/black or yellow for a Person with Low Vision (Visually Impaired) to identify the slope of the stairs easily. Every staircase should have a side ramp in contrast to the staircase along with contrasting colour of railing.	Adaptation required for staircases, ramps and side railings for better access by Person with Low Vision.
	Signage Boards	It is recommended to all Persons with Low Vision candidates irrespective of their degree of vision Impairment.	Should have back light (white), all the text and images must be of good contrast (black and white, white and black, dark blue on white, dark red on white etc.) and in big font like room numbers, toilet distinction-male, female, name of the wings/blocks are a few examples.	In any place of significance signage should be used. For Example, toilets, training rooms, conference rooms, canteens etc.

## Assessment Guidelines

### Lab Assessment:

- The person must be familiarized with the general layout of the lab, including the entry, exit points, seating spaces prior to the assessment
- Ensure that the equipment in the lab are labelled using contrasting colour for better visibility to the candidates.
- It should be ensured that all equipment required during the assessment are within close reach/easily accessible by the person.
- Ensure that the Illumination is appropriate in the lab
- Working platform for Persons with Low Vision should be clutter free to avoid accidents during practical.
- Information regarding accessible restrooms must be provided to the person.
- Based on the qualification pack requirements, practical assessments should be made more inclusive by introduction of low cost tactile materials (easily available in training centre) or high colour contrast such as white background and text in black colour; blue background and text in yellow colour.

### Computer Assessment:

- Person with Low Vision (Visually Impaired) should also be given magnifier either handheld or on the computer.
- The computer should be configured in terms of colour, resolution and other accessibility needs based on the person
- The computer must have screen reader software installed for ease of access, and assessment software should be compatible with screen reader and magnifier. For example, testing using Tally for accounts or Eclipse for Java both software need to be checked for accessibility

### General Guidelines:

- Ensure that the date and venue is communicated in advance to the trainees.
- Any requirement during the assessment should be communicated in advance to the TP to make arrangements accordingly.
- Orient the candidates in advance about the process of assessment
- Take a stock of the candidates understanding of the process by asking the candidate to explain what has been understood.
- Give precise and clear instructions
- Ensure that the designated room for assessing the candidate does not have distraction, minimize other environmental sounds in the vicinity.
- Ensure that the distance between candidates is such that it does not disturb the other candidates, when the narration is going on.

- Help from the trainer can be taken,
- Remember that your trainees with disabilities are going to work with persons without disabilities. Pitying, belittling or lowering the standards would defeat the purpose.
- The Assessment guidelines given are only to enable the assessor to conduct the assessment smoothly. Adherence to the guidelines is not mandatory but preferred.