Educational Support for Students with Low Vision

Presented by:
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The role of vision in the learning process

Vision is the primary sensory input; about 80% of learning takes place through the visual system. Vision is responsible for providing feedback about the world; it is also the unifying sense allowing sighted people to integrate their sensory experiences. At 3 months of age vision is the lead sensory modality and at 6 months it is the primary source of information about the environment.

For children with low vision, the acquisition of information about the world may be more challenging, particularly in the areas of concept development, language acquisition and movement. Children with low vision may need to learn to use alternative means and strategies for reading, writing, interacting socially and performing various daily tasks. Though in the words of one senior student, having a vision impairment is just not that hard!

Don't you get it?
I'm just like you
Everyday things
Aren't that hard to do…

– Listen to Emma-Mae's poem: www.svrc.vic.edu.au/media/EPok.mp3

It is important to remember that each child is a unique individual and adjustments to their educational program need to be tailored accordingly.

"Students who are entering Prep this decade will graduate during the late 2020s and early 2030s. This may seem like a long way off … and it is! As teachers, aides and parents we are preparing our children for a world we don't really know. We need to assist each child to become independent, literate, numerate, technologically savvy, adaptable and able to participate fully in whatever the 21st Century has to offer."

– Annette Godfrey-Magee, 2013

THE GOAL FOR ALL STUDENTS WITH LOW VISION IS TO BECOME

COMPETENT, SELF-SUFFICIENT, INDEPENDENT PEOPLE

WHO CAN PARTICIPATE IN ALL FACETS OF LIFE.

The nature and degree of vision impairment

Educators will be better able to make adjustments to accommodate the student's learning process by developing an understanding the nature and degree of the vision loss and the educational implications of this loss for their work together in the classroom.

Vision impairment refers to a significant loss of vision in both eyes, which cannot be corrected with glasses. The degree of loss may vary significantly, which means that each student with low vision or blindness needs individual adjustments to learn most effectively.

There are two main categories of vision impairment:
- "low vision" (people with low vision may also be referred to as "partially sighted") and
- "blind"

The majority of students with vision impairments have "low vision", which means they are print users but may require special equipment and materials. These students should be encouraged to use their residual vision in their educational program as much as possible.

You may also come across the term "legally blind". Legally blindness is used to indicate entitlement to important government and private agency services and/or funding. Students who are described as "legally blind" usually have some vision. The term "legally blind" also refers to people who are totally blind.

Vision impairments are also classified as:
- congenital (vision loss which is present at birth) or
- adventitious (vision loss later in life as a result of a degenerative condition, illness or accident)

The age of onset and level of development before sight loss occurs are critical factors in the student's ability to acquire skills and concepts.

It is important to be aware that although two children with vision impairments may be assessed as having the same visual acuity, they may each function and learn in very different ways.

Vision may fluctuate or may be temporarily influenced by such factors as vision fatigue, lighting and/or glare.

An understanding of the type of vision impairment is certainly important, but generalisations about the student's visual functioning cannot be made solely on the basis of the diagnosed eye condition.

For more information about vision impairment see: www.svrc.vic.edu.au/AV.shtml

What is visual acuity?

Visual acuity

Visual acuity refers to the measure of the eye's ability to resolve detail at both short and long distances. Each eye has its own level of visual acuity and this can vary considerably.

Distance visual acuity

The capacity of the eye to resolve fine detail is measured by determining the smallest size print/picture that the student is able to read from an eye chart. The student's visual acuity is often recorded as a "Snellen fraction", the numerator representing the testing distance and the denominator indicating the smallest letter/picture size the student is able to identify. A student who has a visual acuity of 6/24 sees at 6 metres what the "normal" (ie 6/6 vision) eye can see at 24 metres.

Near visual acuity

Determining near visual acuity involves assessing the capacity of the eye to resolve fine detail. Near visual acuity is recorded as an "N point" size. The N point originally referred to a measure of print size used by printers. The "normal" eye can generally read print which is N6 (newspaper print) or even N5.

The N point size indicated on the Educational Vision Assessment Clinic reports (and other ophthalmologist's reports) generally refers to the minimum size print a student can resolve. A student with low vision generally requires a different size print (usually larger) for sustained reading.

What is distance visual acuity?

Measurement of distant vision acuity explained

The distance visual acuity test establishes the distance visual acuity (distance vision) and is only one of the tests undertaken to assess eyesight. The distance visual acuity test is made up of capital letters, numbers, symbols or pictures which are larger at the top and smaller at the bottom of the eye chart. Distance visual acuity is usually measured at 6 metres; the chart may be viewed using a mirror.

The top line of the chart is usually of a size that could be read at a distance of 60 metres by a person with “normal” distance vision. The second line is of a size that could be read at a distance of 36 metres by a person with “normal” distance vision and so on.

Below is an example of a Snellen chart (not to scale).

“Normal” eye could read at 60 metres

“Normal” eye could read at 36 metres

“Normal” eye could read at 18 metres

“Normal” eye could read at 12 metres

“Normal” eye could read at 9 metres

“Normal” eye could read at 6 metres

“Normal” eye could read at 5 metres

“Normal” eye could read at 4 metres

The result of the test is written as a fraction.

- 6/18 means that the third line down on the chart above can be read from 6 metres away
- 6/6 or 6/5 is considered to be “normal” distance vision

If no lines can be read from 6 metres then assessment may take place at shorter distances.

- 3/36 means that the second line down on the chart above can be read from a distance of 3 metres
- 2/60 means that the top line on the chart above can be read from 2 metres

Near Vision – Print Size (recorded as N point eg N80)

N	
80	yes have
64	two kiss
48	sun back happy
40	his come
32	box down mummy saw
24	day once because how girl
20	big time children zoo will
16	out baby going hot been
12	and went birthday for some
10	got play friend him back
8	cat like about can make little but very daddy must
6	car over truck was shop party get with after help

Adapted from: Near Vision Test for Children, Selected Word Reading Chart

Simulation of vision impairment

Visual acuity

6/6 – normal vision

6/24 – partially sighted range

Eligible for Visiting Teacher Service

6/36 – partially sighted range

Worse than 6/60 – legally blind range

Eligible for Program for Students with Disabilities funding (DET schools) and the Disability Support Pension (Blind) at age 16 years

Fields of vision

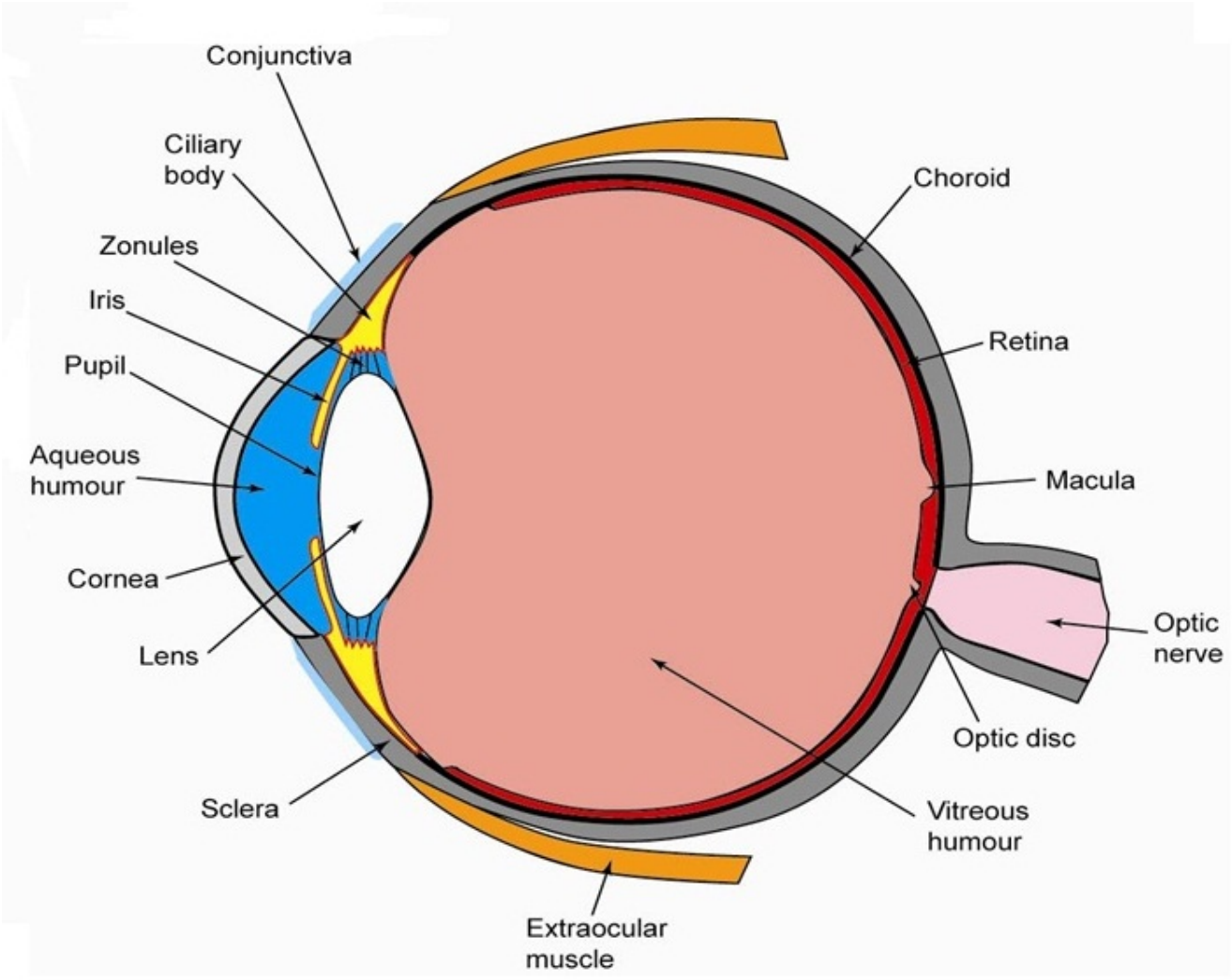
Students may also be eligible for additional support due to restricted visual fields:

- fields reduced to less than 20 degrees – eligible for Visiting Teacher support
- fields reduced to less than 10 degrees – eligible for Program for Students with Disabilities funding (DET schools) and the Disability Support Pension (Blind) at age 16 years

Peripheral field loss
eg Retinitis Pigmentosa

Central field loss
eg Macular degeneration

The anatomy of the eye



Curriculum considerations for students with vision impairments

Educators of students with vision impairments refer to the **core curriculum** and the **expanded core curriculum**.

Core curriculum

The **core curriculum** refers to the knowledge and skills a student should have acquired by the completion of their secondary education:

- English
- Mathematics
- Sciences (including Physics, Chemistry and Biology)
- Humanities and social sciences (including History, Geography, Economics and Business, Civics and Citizenship)
- The Arts
- Languages
- Health and physical education
- Technologies (including digital technologies and design and technologies)

For additional information and ideas to improve access to the core curriculum for students with vision impairments see: www.svrc.vic.edu.au/CUcore.shtml

Expanded core curriculum for students with vision impairments

Students with vision impairments – low vision and blind students – must achieve mastery of an array of additional disability-specific knowledge and skills in addition to the regular core curriculum ie the **expanded core curriculum** for students with vision impairments.

The **expanded core curriculum** is unique to each student with impaired vision and, depending on their specific needs, may include:

- **Compensatory or functional academic skills** eg braille, auditory skills, concept development, exam technique, handwriting, perceptual skills,
- **Use of access technology** eg touch typing and key commands; refreshable braille display, electronic magnification unit, scanner, text to speech software
- **Visual efficiency skills** eg eccentric viewing, use of optical aids, managing vision fatigue
- **Orientation and mobility** eg cane use, road crossing, public transport
- **Social interaction skills** eg eye contact, body language, making friends
- **Independent living skills** eg banking, shopping, money, shoelaces, use of knife and fork, telling the time, preparing a snack or a meal
- **Recreation and leisure skills** eg games and sports, use of social media, taking turns,
- **Career education** eg career awareness, job skills, work experience
- **Self determination** eg explaining vision impairment, self advocacy, managing learning

Expanded core curriculum

The **expanded core curriculum** refers to essential additional disability-specific skills for students with vision impairments. Each student with low vision is unique, and so are the additional skills each student will require in order to achieve success in their educational setting.

The expanded core curriculum for students with vision impairments includes the following:

Compensatory or functional academic skills

Compensatory skills, including communication modes, involve the use of tools, adaptations, modifications and behaviours that maximise the student's opportunity to access the learning environment. Communication needs of students with vision impairment will vary, depending on the degree of functional vision, the impact of additional disabilities, and the task to be done. Students may communicate through braille, large print, print with the use of optical aids, regular print, tactile books, a calendar system, sign language, audio materials, or combinations of these methods.

Other compensatory skills may include, but are not limited to: writing adaptations, computer keyboarding, study and organizational skills, abacus, and accessing information through the auditory and tactile senses.

Low vision and blindness may result in the need for specialised instruction in concept development, spatial awareness, and listening skills.

Use of compensatory skills will minimise the effects of reduced vision and will optimise access to the educational environment.

Access technology

Access technology can assist people with vision impairments to independently perform a task or job that they might otherwise be able to complete only with assistance. Access technology can include devices designed specifically for people with vision impairments, such as braille displays, electronic magnification units, magnifiers, and telescopes. Access technology can also include large computer screens, computer software, voice output devices and commonly used aids such as white canes, visors and sunglasses.
Training in the efficient use and maintenance of access technology increases the potential for maximum involvement in all areas of curriculum and in life.

See also the SVRC Access Technology page: www.svrc.vic.edu.au/AT.shtml

Visual efficiency skills

Visual efficiency skills refer to the manner, technique or approach a student uses to complete a visual task as effectively and efficiently as possible. With thorough, systematic training, most students with functional vision can learn to use their remaining vision better and more efficiently.

Using the best strategies to maximise acuity levels is one component of efficient visual functioning. Interpreting visual information is another component. Efficient use of vision, aided by optical and non-optical aids and strategies, correlates highly with success in the classroom. Students can learn about their eye condition and how it affects visual tasks,

what aids and strategies are most useful, and how to explain their visual needs to others. Efficient study skills, exam techniques and management of visual fatigue can also assist.

Orientation and mobility

Orientation and Mobility is a vital area of learning for students with vision impairments. It emphasises the basic right of people who have vision impairments to travel as independently as possible, enjoying and learning to the greatest extent possible from the environment through which they are passing.

Students will need to learn about themselves and the environment in which they move from basic body image to independent travel in rural areas and busy cities. Developing body concepts, spatial awareness, orientation strategies and an understanding of the world are building blocks for age-appropriate, independent travel for students who are blind or who have low vision.

Students need to develop problem-solving strategies necessary to travel in familiar and unfamiliar school and community settings. Further, they may require training in specific skills such as cane use, road crossing, and use of public transport.

Optimising the use of residual vision may require the use of low-vision aids such as telescopes and sunglasses, or strategies such as wearing hats or visors to reduce glare.

For further information regarding orientation and mobility services for children contact:

- **Guide Dogs Victoria's Children's Mobility Service**
  www.guidedogsvictoria.com.au or (03) 9854 4444
- **Vision Australia's Orientation and Mobility instructors**
  www.visionaustralia.org or 1300 84 74 66

Social interaction skills

Effective social interaction skills are essential for students with vision impairments. Sighted children and adults have learned almost all their social skills by visually observing other people and behaving in socially appropriate ways based on that information. Individuals who are blind or who have low vision may not be able to learn skills of social interaction in this casual and incidental fashion. They may require thorough, careful, conscious, and sequential teaching.

Effective social interaction skills enable the student to participate in healthy and safe social relationships, seek information to solve problems, and participate in recreation/leisure activities.

Understanding the role of body language, facial expressions, gestures and vocal tones is especially important when the visual cues cannot be used.

Students with vision impairments need to be effective self-advocates. They should be able to accept or decline help graciously. Instruction in these skills may mean the difference between social isolation and a satisfying and fulfilling life as an adult.

Independent living skills

Independent living skills and personal management skills are an essential and often overlooked need area for students with vision impairments. This area encompasses all the tasks and functions people perform, according to their abilities, in order to live as independently as possible. These needs are varied and include among others, skills in personal hygiene and food preparation, money and banking, time management, home management, and organisation of personal belongings.

Recreation and leisure skills

Recreation and leisure skills are important for quality of life during the school age years and beyond. With adaptations, modifications and safety supervision, students who are blind or who have low vision can participate in many of the same individual and group activities enjoyed by sighted peers. Sighted people usually select such activities by visually observing them and choosing those in which they wish to participate. Recreation and leisure skills may need to be deliberately planned and taught to students with vision impairments and should focus on the development of life-long skills.

In addition to traditional games and activities, there are games such as goalball, swish and blind cricket etc, which are designed to be played with low or no vision. Australia fields international teams in each of these sports

Basic motor skills, as well as cooperative play strategies, may need to be taught in a specific manner in order to maximise success. Students may benefit from exposure to a healthy balance of solitary, social, passive and physical activities.

Students should be aware of local, state and national organisations that promote recreation, leisure and sporting activities for people with vision impairments. A high correlation has been shown between recreation experiences, satisfaction with life, self-esteem and success in the workforce.

Career education

Career and vocational education focuses on skills, experiences, and adaptations necessary to understand, prepare for, and access the world of work.

Career and vocational education may need to be specifically designed to fit students' needs, as general instruction may assume a basic knowledge of the world and of work based on prior visual experiences.

Career and vocational education for students with vision impairments should begin in early childhood. This can provide learners with vision impairments of all ages the opportunity to learn first-hand about the variety of work people do, through strategies such as role-playing, peer mentoring, and job shadowing. Career education should be structured to address personal strengths and weaknesses, work habits, ethics, workplace social skills, vocational interests, personal options, and specific skills training programs. Older students may require instruction in employment-seeking skills, employment-keeping skills, financial management, adult service providers, training programs, etc. Work experience is very important for teens.

Unemployment and underemployment continue to be a leading issue facing adults with vision impairments, making this area of the expanded core curriculum vital for students of all ages.

See also the SVRC Career Education page: www.svrc.vic.edu.au/CUcareered.shtml

Self determination

Self determination encompasses defining and achieving goals based on a foundation of knowing and valuing oneself. It comprises a knowledge of self and others, personal management, effective communication, self-advocacy and advocacy within systems, decision-making, goal setting and problem solving.

Self determination may be as basic as making choices but may also include accepting and declining help, managing equipment breakdowns, disclosing vision impairment to a future employer and dealing effectively with bullying.

For more information about the expanded core curriculum, see www.svrc.vic.edu.au/CUecc.shtml

Aids and technology that your student may use

There are many equipment options available which can greatly assist students with vision impairments to access the curriculum and to pursue personal and career goals. Students need to learn to select the most appropriate aid or technology option that best meets their needs in a given situation; and they may require direct instruction in the use of each aid or item of technology.

In alphabetical order, the aids and technology which may assist students with vision impairments include:

Audio recorders/players can be useful to take notes, record lessons, answer extended questions and complete exams. They can also be used to give extended directions or information; and record excerpts from texts and handouts. Teachers can record feedback regarding assignments, tests, and projects.

Brailler writers allow users to input using braille and/or read and edit using braille hard copy or via refreshable braille display.

Computers and notetakers may improve student access to their learning materials. The accessibility options for larger print, voice output etc which are available with “off the shelf” computers may be adequate for some students with low vision, however students may need specialised software – large print, speech, refreshable braille. Speak to your Visiting Teacher about how to enhance access to the computer for students with vision impairments.

Electronic magnification units can be used to enlarge print material on a monitor or screen. Magnification, contrast, and illumination can be optimised for individual student use. Handwriting, craft activities and interesting objects can be enlarged for detailed viewing.

Green/Bold lined paper has bold lines and enlarged spaces for students who have difficulty writing with regular lined paper. A range of different bold lined paper is available, eg graph paper for mathematics or staves for music notation. There are “masters” for a range of green/bold lined paper on the SVRC website:
www.svrc.vic.edu.au/CUboldp.shtml

iDevices and Windows compatible alternatives (including iPad, iPhone etc) with inbuilt accessibility including Zoom (enlargement) and VoiceOver (speech output) can offer students with vision impairments improved access to text, worksheets, the internet, GPS, interactive whiteboards etc.

Keyboarding/Typing can be used as an alternative to handwriting for students with vision impairments. Using the key commands can assist the student to efficiently navigate around the screen. Keyboarding skills should be introduced as early as possible.

Low vision aids such as hand held magnifiers for reading print, or a monocular for reading from the whiteboard can assist the student to work independently in the classroom. An assessment of the suitability of a low vision aid for a particular student can be obtained from an optometrist.

Materials in alternative format, including textbooks, novels and class handouts, can be provided for eligible students in a range of formats – etext, braille, audio – by the SVRC. Speak to your Visiting Teacher about provision of materials in alternative formats.

Reading stands bring work closer to the eyes for improved posture and optimum reading angle.

Reading windows and line markers may assist students with low vision.

Scanning devices and software can offer access to print material in the student's preferred format.

Talking books versions of many novels (eg DAISY and mp3 format) are available to borrowers through the local library or a specialist library such as the Vision Australia Library (email library@visionaustralia.org). Many titles are also available commercially through suppliers such as Bolinda (www.bolinda.com/aus/).

Talking or enlarging calculators, either stand-alone or as calculator emulator software, can enhance student access to basic and/or scientific/graphing calculators.

iPad Accessibility Features – iOS7 Update

The iPad offers a number of inbuilt features to enhance accessibility for students who have vision impairments eg Zoom, VoiceOver, larger type.

To get to Accessibility you need to do the following:

- Tap Settings on the iPad Home Screen
- Tap General (left side of the screen).
- Tap Accessibility (right hand side of the screen)

Once in Accessibility you will find the following:

- VoiceOver
- Zoom
- Invert Colors
- Speak Selection
- Speak Auto-text
- Larger Type
- Bold Text
- Increase Contrast
- Reduce Motion
- Switch Control
- Accessibility Shortcut

VoiceOver

If you want to use VoiceOver you need to make sure Zoom is turned off.

- With Accessibility selected on the right hand side of the screen the first heading is VoiceOver, tap once and then once more to turn it on.

Operating the iPad with VoiceOver

VoiceOver will read the icons as you tap on the screen. The nice thing about this is that nothing else will happen until you double tap on the screen. This will cause the selected app to open.

- To hear the app – tap once with one finger (or flick once anywhere on the screen)
- To open the selected app – tap twice with one finger
- To scroll to the next page – flick with three fingers (this is quite a firm action and may take a bit of practice)
- To turn VoiceOver off go back into Accessibility and select VoiceOver, one tap, then two taps.
- If you are having trouble with the gestures there is a VoiceOver Practice link directly under the VoiceOver heading. It is worth getting to know this option to learn the VoiceOver gestures. There is also an app called VO Starter if you want to be a power user.

A note of caution: Beware of the *screen curtain* when VoiceOver is on!

- The screen curtain is like a screen saver. It is activated by tapping three times with three fingers when VoiceOver is on.
- If you accidently do this, tap three times with three fingers to turn it off.

Zoom

The second heading down is Zoom, tap once to get into Zoom and then tap to turn it on. From now on the gestures for Zoom change:

- To Zoom – double tap with three fingers (do the same to turn it off)
- To move the screen – drag three fingers around the screen i.e. left, right, up and down
- To change the level of Zoom, make sure Zoom is on then double tap twice with three fingers. Leaving your fingers on the screen slide all three fingers up or down to change the level of enlargement

Invert Colors

- This next option creates a black screen with white print.
- A single tap will turn it on.

Speak Selection

- This option allows you to hear text read out loud.
- A single tap activates Speak Selection.
- Now when you use Notes or iBooks you can make a bubble by pressing on the screen until a bubble appears.
- Tap “Select All” then all the text will be highlighted.
- Another menu pops up.
- Tap “Speak” and the text will read for you.

Speak Auto Text

- This option can be used if you want a spoken warning that auto correction is offering you a word.
- A single tap activates Speak Auto Text

Larger Type

- Tap once to select Larger Type.
- Select your preferred print size.
- This will make print larger in Contacts, Mail and Notes etc.
- Can be used with Zoom or VoiceOver on.

Bold Text

- Tap once to turn on Bold Text. The print will be slightly thicker.

Increase Contrast

- For Increase Contrast, tap once to turn it on.

Reduce Motion

If you don’t like the new iOS 7 3D wallpaper or find the movement distracting, you can change it. This also has the added advantage of saving the battery.

- Turn on Reduce Motion with a single tap.
- When you turn on Reduce Motion the Home screen transitions will fade instead of zoom.

Accessibility Shortcut (Triple Click Home)

This option allows you to alternate between VoiceOver, Zoom, Invert Colors, Switch Control etc.

- Go to the Settings → General → Accessibility.
- Go down to the Accessibility Shortcut and tick the options you want.
- A triple-press on the iPad's physical Home button will bring up the options you have selected.
- Another triple-press on the Home button turns the option off.

This is useful if students like to use more than one accessibility option. E.g. some students like to toggle between Zoom and Invert Colors.

Switch Control

- This is new in iOS7 and allows you to set up a switch to be used with the iPad.
- You can also quickly turn the switch on and off by selecting it as an option in Accessibility Shortcut and pressing the Home Button 3 times.
- There is also an "Enable Motion Sensing Controls" setting so the iPad can be activated with head movements.

Charlene Cullen from Spectronics has a good article with videos if would like to find out more: www.spectronicsinoz.com/blog/apps-and-mobile-learning/accessibility-and-access/switching-it-up-in-ios-7/

Other Changes in iOS7

Here are some of the new gestures for iOS7

- To close apps, double press with the home button then flick up to close apps
- Use swipe gestures to back a screen. E.g. Flick from left to right to go back (this is instead of using the back button)
- Unlimited apps in folders.
- Spotlight search is now available from any screen with a downwards swipe
- Access to AirDrop file sharing from the Control Panel

Also in settings

Outside of Accessibility there are a number of other menu headings worth exploring for vision impaired users including:

- **Brightness and Wallpaper**
  You can alter the brightness of the screen and change the background the colour of the iPad.

- **Mail, Contacts, Calender**
  Select a large font size

- **Bluetooth (under General)**
  Try Bluetooth for syncing a small portable keyboard or braille device to the iPad.

- **Keyboard (under General)**
  Customise keystrokes e.g. Auto-Capitalisation, auto-correction, enable caps lock, check spelling. There is also an option for adding your own shortcuts keys.

Optimising the learning environment

It is important to determine the factors that will provide each student with their optimal visual environment – and it is important that the student understands and can communicate their unique needs in relation to their vision impairment.

Lighting

Eyes "run" on light therefore the most critical issue in being able to access the learning environment is the amount, intensity, position and direction of the light in all learning areas.

- consider "task" lighting ie a light being focused on a particular area – the majority of children with low vision require some form of task lighting to increase visual efficiency
- an individual lamp will instantly increase contrast – to reduce glare, the lamp should be placed below eye level and should shine onto the task from a 45 degree angle
- the student needs to be aware of how to manage their lighting needs and why
- inappropriate lighting increases vision fatigue and may impact on behaviour:
    - fluorescent globes are the most efficient globes and produce the most light for ambient purposes but they tend to create glare and distort colours
    - halogen globes produce a very white light but they also emit a lot of heat and use more energy.
    - the best light to maximize lighting levels are warm white bulbs (2700-3500 Kelvins)
- light from computer screens can increase vision fatigue – changing the setting to white print on black background may reduce fatigue. Computer users may benefit from the use of glare filters.
- for those who are light sensitive, bright or direct natural light should be filtered through UV blocking film or tinted glass, usually of a clear, amber, or pink colour
- for visual comfort and glare reduction, avoid white or blue walls – the best wall colours are pink, peach, and warm beige. Textured walls are better than smooth, shiny ones. Put up posters or wall hangings to soften highly reflective areas.
- consider lighting conditions in all areas of the school environment in which the student will be moving – both inside and outside – eg stairs, covered walkways, locker areas and toilets
- torches can be useful to a student experiencing difficulties in areas of low illumination eg locker, school bag and dark corners of a room

Glare

- some students are particularly sensitive to glare eg photophobia
- avoid positioning a student facing a light source (natural or artificial)
- avoid bright backlighting when teaching eg stand away from bright windows
- consider sunglasses and a hat, particularly when working/playing outside
- reduce glare in the classroom eg use blinds, curtains, posters etc to cover glary windows
- avoid reflection on tasks, work surfaces etc – avoid using glossy paper and toys/work surfaces painted in high gloss
- consider the placement of computer screens to minimize glare
- turn off overhead lighting when using the smartboard
- allow students to reduce glare by using a hat or sunglasses inside

Contrast

- improve contrast on work surfaces by using contrasting coloured cloth (eg a piece of beige or black felt), a coloured tray or place mat; this will improve contrast and therefore ensure the visual stimuli is more visible eg a black cup on a light surface
- task lighting (eg a lamp) may assist
- when producing learning materials for a student, consider contrast eg bolder lines for maths worksheet
- use black felt pens on a clean whiteboard
- allow students to use texta colours in preference to coloured pencils when drawing/colouring
- bold lined paper and black felt tipped pens increase contrast for the student
- consider areas in the school environment which need to be made more visible eg paint edges of steps, highlighting a light switch and doorways
- consider the clothes you wear eg a class teacher wearing bright clothes is easy to find, particularly when on excursions in unfamiliar environments
- wearing lipstick can highlight the teacher's facial expressions

Crowding

- children with low vision may become overwhelmed with cluttered worksheets and whiteboards – their functioning may be improved by reducing the visual stimuli
- use masks such as black pieces of cardboard to block out various questions on worksheets etc
- large print with additional spacing may be preferred to regular print
- detail in illustrations and drawings may need to be reduced

Print

- size of print is not nearly as critical as the quality of the print
- encourage students with low vision to access N12 print either by use of low vision aides or other technology if this is possible
- students with low vision tend to prefer the San Serif fonts: Arial, Tahoma and Verdana
- holding materials close to the eyes will not cause harm – allow the student to place materials in a position and at a distance that they choose

Materials in alternative format

- students generally have a preferred format for their learning materials – etext, braille/tactile, audio, large print
- ensure that student’s learning materials are available in a timely manner
- the student's preferred format may change from one activity to another eg braille for Maths, etext for novels

Seating

- ensure that the student is in the most appropriate seating position
- consider residual vision – where is the student’s best field of view? (including null position)
- consider low vision aids – if the student is using a telescopic aid, they may need to sit towards the back of the room
- if contact lenses and/or spectacles are worn, what distance/s have they been set at?
- does the student require access to a power point?

Organisation

- if possible, keep classroom environment static
- keep the classroom tidy eg put chairs under desks
- alert student to any changes in the room layout
- a student may need extra storage room for equipment etc
- if the student has a laptop or other heavy items, they may like to consider using a suitcase on wheels
- encourage the student to develop good study and exam techniques

Size/Distance

- each student will have his/her own distance for reading – don't be concerned if this distance is very short – most young students are able to focus at short distances
- reading stands may help avoid back and neck pain
- consider the size of stimulus used eg toys, items on worksheets – do the diagrams need enlarging or reducing?
- consider offering the student their own example of an item being demonstrated for close inspection
- consider the size and colour of print on the white board
- allowing the student to move to the board or sit at the front of the group may improve visual access
- consider allowing the student to access the board using iPad or other technology eg the iPad can be synced with the interactive whiteboard
- use of the 'pinch and zoom' feature on the iPad may improve access to whiteboard and worksheets

Time

- students with vision impairments may require additional time to investigate and respond to a visual stimulus
- allow the young student additional organisational time eg when asked to pack up and collect school bag, coat and homework – meanwhile work on streamlining for best efficiency
- it may be appropriate for students to view stimulus material prior to the class eg models, complex diagrams
- it may be appropriate for students with vision impairments to perform fewer tasks than their sighted peers

General teaching strategies

- ensure that students have their learning materials in their preferred format – braille, etext, audio, large print – at the same time as their sighted peers
- use black felt pens on a clean whiteboard
- read out loud as you write on the whiteboard and spell new words as you go – this will assist the student with impaired vision who may not be able to see the board
- email students information and worksheets or use a flashdrive to transfer files to and from students
- reduce visual clutter – leave out unnecessary detail on worksheets and on the whiteboard
- consider vision fatigue – signs of vision fatigue include red eyes, rubbing eyes, watering eyes and/or headaches. Allow for rest breaks or alternate visual with non-visual activities eg listening to audio materials.

- each student will have his/her own distance for reading – don't be concerned if this distance is very short – young students are able to focus at short distances
- encourage the use of reading stands which may help avoid back and neck pain
- verbalise activities using directional language eg today's spelling words are on the section of the whiteboard nearest to the door
- allow the student to hand out materials – this will help them to know where the other students in the class are
- provide verbal cues eg say the student's name and verbalise what is about to happen
- use verbal rewards and praise as the student cannot see a smile or nod of approval
- ensure all relevant staff including replacement teachers are aware of the student's vision impairment and the related implications
- encourage eye contact and appropriate body language
- encourage appropriate social skills
- encourage "looking" by using words such as "look", "find" and "see"
- encourage the use of low vision aids and other technologies to improve access to the learning environment
- encourage the use of touch typing and key commands to make computer use efficient

Vision Fatigue – Students with Low Vision

Vision fatigue is a feature of some eye conditions including:

- aniridia
- coloboma
- congenital nystagmus
- deteriorating central vision
- ocular albinism

The student is likely to experience vision fatigue from 5-10 minutes after starting a vision-related activity. The differences in onset can vary with:

- the time of day
- intensity and type of vision activity
- previous exposure to the vocabulary and subject matter of the text, test or non-test context
- lighting and glare

Common symptoms of vision fatigue may include:

- avoidance of visual activity
- blurred vision
- double vision
- headaches
- inability to change focus from near to far objects and vice versa
- increase in nystagmus
- loss of concentration
- sore eyes
- watering eyes

Suggestions for teachers to assist in minimising student's vision fatigue:

- allow student to take a vision break (2 minutes max.) within the classroom
- intersperse reading/pencil and paper tasks with oral or aural discussion/lecture sessions where ever possible
- if glare is a problem, student can move to a darker area in the room or lower the blinds
- provide worksheets in a "sans serif'" font such as ARIAL or TAHOMA in a size that is no smaller than the recommended sustainable print size
- allow extra time or reduce quantity of vision task

Suggestions for students to delay the onset of vision fatigue:

- look away from the task for 30 seconds or so, or close the eyes
- gentle massage to forehead, temples and eye brows
- relaxation techniques
- use a different reading method such as large print or audio
- alter position or posture by using a reading stand
- change the lighting conditions, eg use a near soft light
- avoid glare

Special Provision for Students with Vision Impairments

Special Provision may be available to students whose learning and assessment programs are affected by illness, impairment or personal circumstances. Students who are eligible for Special Provision are not exempt from meeting the requirements for Satisfactory Completion of the Victorian Certificate of Education (VCE), or from being assessed against the outcomes for a particular Study.

The guiding principles of Special Provision are that the provision:

- should provide equivalent, alternative arrangements for students
- should not confer an advantage to any student over other students

There are three types of Special Provision for VCE:

- Special provision for school-based assessment requirements
- Special examination arrangements for external examinations
- Derived examination score

Special Examination Arrangements

In order for students with vision impairments to be eligible for Special Examination Arrangements, there should be a documented history of Special Provision approved by the schools for the student. Special Provision for units 3 and 4 subjects must be applied for on the form “Special Examination Arrangements Application” distributed to schools by the Victorian Curriculum Assessment Authority (VCAA) each year. Support statements and recommendations from the Visiting Teacher and/or staff from the SVRC are required.

Students with vision impairments may be eligible for:

- extra reading time and/or writing time
- reader and/or scribe
- rest breaks
- alternative format examination papers – braille, large print, etext or audio
- written descriptions of pictures and diagrams
- use of access technology and equipment such as a braille notetaker or a computer
- separate room with individual supervision
- exemption from the GAT

Applications

Applications for Special Examination Arrangements for all VCE examinations must be lodged early in Term 1. All Special Examination Arrangements for a student must be approved by VCAA. VCAA does not accept applications made directly by students, parents/guardians or independent professionals.

For further information visit the Victorian Curriculum Assessment Authority’s website: www.vcaa.vic.edu.au or phone (03) 9651 4300.

Factors influencing successful outcomes for students with vision impairments

In 1986, US researchers determined that the **most important factor** influencing successful outcomes for students with vision impairments in mainstream schools is **an accepting and flexible classroom teacher**. Their findings relating to successful outcomes are summarised, in order of importance, below:

1. **Accepting and flexible class teacher**
2. Peer acceptance
3. Social skills
4. Academic achievement
5. Positive self-image
6. Independence
7. Accepting attitude of family
8. Motivation
9. Available support personnel
10. Adequate special supplies and equipment
11. Ability to compete
12. Participation in school activities
13. Acceptance of vision impairment
14. Adequate special skills
15. Normalisation
16. Realisation of potential
17. Equal opportunity/expectations
18. Expected outcomes
19. Adequate basic skills
20. Open communication between school & home
21. Travel skills
22. Supportive family
23. Emotional stability
24. Positive attitude of the school principal
25. Knows when to ask for help
26. Realistic goals
27. Realistic expectations from family
28. Responsibility
29. Personality
30. Encouragement
31. Family interest in school activities
32. Adaptability or flexibility
33. Competency of VI teacher
34. Community acceptance/support
35. Family cooperation in problem solving or planning
36. Stimulating home environment
37. Ability to follow directions in a group
38. Intelligence (average or better)
39. Personal growth
40. Ability to care for personal needs
41. Continuing contact between regular teacher and VI teacher
42. Opportunity for VI student to participate in peer group
43. Access to related services
44. Earned grades
45. Attractive appearance
46. Preschool training/early intervention
47. Treated “like other kids” in family
48. Maximised use of vision
49. Problem solving skills
50. Self advocacy/assertiveness
51. Sense of humour
52. Available counselling services
53. Play and/or leisure skills
54. Organisational skills
55. Persistence
56. Discipline
57. Reinforcement of success
58. Career awareness
59. Able to be challenged
60. Available support groups
61. **Amount of vision**
62. Well arranged classroom
63. Support from citizen groups
64. Stability of vision
65. Independent work/study skills
66. Family interest in out-of-school activities
67. Adequate public transport
68. Available recreational resources
69. Community advocacy

Research findings by V. Bishop from the Journal of Visual Impairment Blindness, November 1986

Your student(s) with low vision

Read through this booklet and highlight the points that are particularly relevant to your student. It is not possible to comprehensively cover the broad spectrum of vision impairments in a booklet of this size however this booklet aims to provide the necessary information to facilitate your understanding of some of the causes and implications of vision impairments.

Fill out the pro-forma provided; it will form the basis of an information file about your student. You can ask your Visiting Teacher to help you and to clarify any other issues raised in this booklet. Remember, the role of the Visiting Teacher is not only to teach the student but also to assist you to understand the student's problems and how to minimize them.

STUDENT'S NAME _____

VISION IMPAIRMENT/S _____

EXPLANATION OF IMPAIRMENT/S (define terms) _____

_____

_____

IMPLICATIONS OF IMPAIRMENT/S _____

_____

WHAT PART OF THE EYE IS AFFECTED? (Mark on diagram of eye).

SPECIFIC REQUIREMENTS:

(a) Optimum placement in the classroom _____

(b) Optimum lighting _____

(c) Contrast requirements _____

(d) Minimum print/image size _____

(e) Print/image size for sustained reading _____

(f) Time allowances _____

(g) Other Requirements _____

Note: for (d) and (e) refer to the Near Vision Test for Children (NVTC) Selected Reading Chart (appended)

AIDS AND EQUIPMENT USED BY STUDENT _____

_____

_____

WHEN SHOULD THESE BE USED? _____

_____

_____

OTHER AGENCIES TO WHICH STUDENT HAS BEEN REFERRED _____

_____

_____

VISITING TEACHER'S NAME _____

CONTACT NUMBERS _____

VISIT TIMES _____

WHAT ASSISTANCE CAN THE VISITING TEACHER PROVIDE IN THE AREAS OF

Specialist teacher working with the student
(Brief outline of Visiting Teacher's program for year)

_____

_____

Consultant to Class Teacher

_____

_____

EQUIPMENT USED BY THE STUDENT

Equipment	**Source**
_____	_____
_____	_____
_____	_____

Date _____

To my replacement teacher

Please be aware that _____ is a student in my

class. This student has vision impairment and reads _____ .

Please remember that:

1. Anything you write down on the board will need to be verbalized; and

2. During fire drills or disaster drills, you will need to take extra care to make sure this student is safe. I have made the following arrangements to ensure the safety of the student with vision impairment:

_____

_____

_____

3. Other:

_____

_____

_____

Should you have other questions or concerns, talk with _____

at the school, or contact the Visiting Teacher (vision impaired) _____

on _____ .

Yours sincerely

_____

classroom teacher

Further information

For students enrolled in government schools, Visiting Teachers specialising in the area of vision impairment, are employed in each region. Visiting teachers provide direct teaching, high-level advice and a range of supports to classroom teachers, education support staff, students, families and the wider school community.

For students enrolled in non-government schools, please contact the principal.

The Statewide Vision Resource Centre's website is a great source of information which will support you to work with your student who is blind:

www.svrc.vic.edu.au

Selected pages from the SVRC website

- **Access technology**: www.svrc.vic.edu.au/AT.shtml
- **Art** for students who are blind or have low vision: www.svrc.vic.edu.au/CUart.shtml
- **Cheat sheets**: www.svrc.vic.edu.au/CS.shtml
- **iPad** for students with vision impairments: www.svrc.vic.edu.au/ATipad.shtml
- **Materials in alternative format** (eg audio, braille): www.svrc.vic.edu.au/ATaltformat.shtml
- **PE, recreation and games**: www.svrc.vic.edu.au/CUpe.shtml
- **Preparing future graduates who happen to be blind**: www.svrc.vic.edu.au/CUpreparing.pdf
- **Students with vision impairments and additional impairments**: www.svrc.vic.edu.au/CUadditionalimpairments.shtml

More professional development opportunities

See the SVRC website for:

- Art4Kids with VI
- Educational support for students with vision and additional impairments
- Including students with vision impairments in the School PE program
- Technology workshops (Skill Power)
- and more!
- www.svrc.vic.edu.au/PL.shtml

NOTES

Please feel free to copy and distribute this material

which was presented at

"Educational Support for Students with Low Vision"

Professional Development Day

by the staff of the Statewide Vision Resource Centre

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