Journal of the South Pacific Educators in Vision Impairment

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Contents

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Opinions expressed in this publication do not necessarily represent the views or policies of SPEVI, but have been presented to stimulate informed debate.

South Pacific Educators in Vision Impairment (SPEVI) Inc. is the major professional association for educators of students with vision impairments in Australia, New Zealand and the South Pacific region. SPEVI acts as the professional body in matters pertaining to the education and support of preschool and school-age students who are blind, have low vision, deaf-blindness, or additional disabilities.

SPEVI Vision

To promote educational systems in Australia, New Zealand and the South Pacific in which diversity is valued and disability would not be viewed as a characteristic by which to judge a student's worth.

SPEVI Mission

To stimulate professional and public debate and action on vision impairment issues and change which affect, or have the potential to affect the daily lives of children and youth who are blind and vision impaired, while emphasising concepts of inclusive, responsive school communities and interdependence between students and families within those communities where all people are valued.

SPEVI Aims

- To act as the professional body in matters pertaining to the education of people with a vision impairment in Australia, New Zealand and the South Pacific region
- To stimulate research and encourage the raising of educational standards
- To promote and encourage the training of educators in vision impairment
- To evaluate and encourage the use of appropriate, up-to-date materials and technical equipment, in the education of persons with vision impairment, and to facilitate in-depth teacher education programs in the use of new techniques and technology
- To promote and encourage the interchange of information among SPEVI members and between SPEVI and other organisations that share similar interests
- To promote and encourage the utilisation of services and materials and the sharing of professional literature, opinion, and experiences
- To use all available resources to further the objectives of the Association.

SPEVI membership and journal subscription

SPEVI Inc. membership is open to educators, professionals and parent groups supporting children and adults with vision impairments. This Journal is provided free to SPEVI members as part of their annual membership benefits. There is an A$25.00

subscription fee per volume for non-members (A$35.00 for subscriptions outside the Pacific region).

Membership information and forms are available on the SPEVI website, http://www.spevi.net/spevi/index.php. Address all correspondence regarding SPEVI membership and JSPEVI subscriptions to:

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Call for articles

The Editorial Committee intends the Journal of the South Pacific Educators in Vision Impairment to be a vehicle for informing researchers, administrators and educators working in government and non-government education organisations, as well as specialist and generic teachers, O&M instructors, allied professionals, parents and others in our communities about research, issues, policies and their implications for practice in Australia, New Zealand and the Pacific Region.

Original manuscripts as well as news items are sought for the refereed and non-refereed sections of the upcoming 2014 issue of JSPEVI. The preferred size limit for manuscripts is approximately 4000 words, with consideration for the nature of the content. Topics appropriate for the journal include, but are not limited to the following:

- original research studies, with practical relevance to education of persons who are blind or vision impaired,
- literature and book reviews,
- conceptual, policy or position papers, and
- descriptions, reviews or evaluations of innovative instructional curricula, programs or models of education for persons who are blind or vision impaired.

Letters to the Editor

Members of the editorial committee wish to encourage discussions of important issues that affect the education of children and adults with vision impairments. The journal should be a vehicle for continuing dialogue about current and future directions. The editorial committee invites letters that explore the many issues facing professionals and families supporting learning with sensory disabilities, particularly those arising from articles in the journal.

Manuscript preparation

Manuscripts should confirm in style to the *Publication Manual of the American Psychological Association* (6th edition, 2010). A brief APA guide may be downloaded from Curtin University website, http://libguides.library.curtin.edu.au/content.php?pid=141214&sid=1335391.

Manuscripts should consist of the following three sections which should be submitted electronically as separate files:

Section 1 Author information

Authors must submit a separate file containing (a) the manuscript title, (b) name/s of each author(s), (c) professional status/title and place of employment of each author, and (d) contact details (address, email, fax, telephone) for the principle author, or the co-author who will be handling correspondence.

The first file should contain the author/s details, the second file should contain the body of the manuscript, and the third file (if required) should contain numbered figures and tables.

Section 2 Manuscript

Manuscripts should be produced using A4 paper (8.5 x11 inch or 21 x 29.5cm) size, Times New Roman, 12-pt font, double line spaced, left alignment, with one inch (3cm) margins on all four sides, with pages numbered. A running title header should be included on each page (with no authorship information included). Figures and tables should be cited in the text, with a suggested location identified, for example “Insert Figure 1 about here”. Always refer in the text to Table 1 or Figure 2 and not to “Table 1 above” or “Figure 1 below”.

Abstract: All manuscripts, including Special Section items should include an abstract of less than 120 words, giving a brief summary of the submission.

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Section 3 Figures and tables

Numbered figures and tables should be provided in a separate file. Tables should be created using a table function, such as Microsoft Word, and double line spaced. Figures must be production-ready, with consideration to the readability of the figure when reduced for publication.

Manuscript review process

Manuscripts will be acknowledged upon receipt. Following preliminary editorial review, articles will be sent to members of the Editorial Panel and where warranted, to consulting reviewers who have particular expertise in the subject. The review process may sometimes take up to three to four months. This journal uses the “blind review” system. The names of consulting reviewers will periodically be published in the journal. Reviewed manuscripts will remain the property of South Pacific Educators in Vision Impairment (SPEVI). Original manuscripts will be returned to the primary author if not accepted for publication.

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President's Message

Tim Crowe-Mai

Welcome to the sixth edition of the *Journal of the South Pacific Educators in Vision Impairment* (JSPEVI). I consider it an honour as the current President of SPEVI Australia. to write this introductory message The SPEVI professional association has at its core the goal of bringing people together, and our journal is yet another demonstration of the vibrancy of its members. As well as the benefits from our famed biennial SPEVI Conferences (the next to be held in Melbourne in January 2015) and our website www.spevi.net, I feel fortunate indeed to be involved with SPEVI and have the opportunity to benefit from its members sharing their own work and experiences.

As you will read, there are a wide range of articles within this issue that I am sure you will find informative since they reflect pertinently on the work done in our specialised field to assist students with a vision impairment throughout the South Pacific region.

I take this opportunity to thank our past President, Associate Professor Paul Pagliano and his team of past Office Holders for their many efforts to raise standards during their incumbency, and as well sincerely thank all those who have taken the time to contribute to JSPEVI 2013, clearly without you there could not be a journal of such a calibre. I also thank Dr. Frances Gentle for her tireless efforts as the new Editor in bringing this journal together, and Dr. Mike Steer for all his efforts as the outgoing Editor of JSPEVI.

To conclude, I am writing most of this message at my desk at the end of a rather cold and bleak day in Adelaide, working as a teacher in a vision support program at a public high school. The day has included among many activities, setting up an electronic magnifier in a maths class, scanning documents, upsizing print and sorting out work experience placements. Today these several activities were just the starting point. The day has also involved negotiating with other teachers to adapt aspects of the curriculum, and collaborating with other VI professionals to ensure the best outcomes for the eight students in the program.

Most importantly, the day, like every other, has been about teaching students with a vision impairment, encouraging, cajoling, and sometimes frankly telling them to pull their fingers out to get work done. It has been variously rewarding, challenging and frustrating, on occasions, all at the same time. But I wouldn't have it any other way … and I think I would have agreement from everyone who subscribes to this journasl, regardless of how they are involved in the process of educating young people and vision impairment.

I commend this edition of JSPEVI to you with the hope it provides the opportunity within your busy days to reflect for a moment on your practice in whatever role you play in the lives of children and teenagers with a vision impairment. Through our ongoing efforts we will all make a positive difference to the lives of those young people who daily share our time, energy and knowledge. Of that I am quite sure.

Wishing everyone all the best, Tim.

Editorial

Frances Gentle

Convening Editor

JSPEVI provides an opportunity to showcase current research and professional activities in the field of vision impairment. This issue highlights research studies undertaken by James Aiwa (James Cook University), Jane Brown (Griffith University), Elaine Gilmour (James Cook University) and Glenda Jessup (University of Sydney). Several of the studies address issues of educational inclusion and school to post-school transitions. Glenda Jessup's research with the Faculty of Health Sciences at University of Sydney combined new iPlatform technologies with development of a survey tool to investigate social experiences of secondary school students. Jane Brown's research with Griffith University explored the development of an interview tool to measure the transition experiences of secondary school students as they move into post-secondary settings. James Aiwa contributed two articles that explore issues of inclusive and equitable access for students with vision impairment in Papua New Guinea, and Elaine Gilmour's article presents literature review of stereotypic behaviour in children in New Zealand who are blind. As a recent PhD graduate of the University of Newcastle NSW, I appreciate the years of dedicated work that go into postgraduate research studies. Our professional association is enriched by its members who commit to furthering the body of knowledge in vision impairment and education. This issue of JSPEVI also includes a keynote paper on cerebral visual impairment that was presented by Emeritus Professor Gordon Dutton at the 2013 SPEVI conference, articles on mathematics and sport and physical activity, and SPEVI, ICEVI and organisational reports.

With the retirement of Dr Mike Steer from the role of Convening Editor, I wish to acknowledge with thanks, his efforts to promote scholarship, information sharing and discussion among educators, researchers, professionals and parents since the journal's inception in 2000. As highlighted in Tim Connell's article, it is important to recognise the talented and inspiring role models and leaders in our field. Mike has been the driving force behind the journal's development, and he continues to be an active member of its Editorial Committee.

The articles and reports presented in each volume reflect the activities and interests of members of our professional association. I encourage you to consider contributing a manuscript for the 2014 edition, or penning a letter to the editor about the issues arising from articles in this year's journal.

Articles

Types of impaired vision in children related to damage to the brain, and approaches towards their management

Gordon N Dutton

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Paper presented at the Biennial Conference of South Pacific Educators in Vision Impairment (SPEVI), Auckland New Zealand, January 2013.

Abstract

Cerebral vision impairment is complex. Impaired control of eye focussing can cause blurred vision. Damaged visual pathways can lead to lack of acuity and/or disordered visual fields. Abnormal eye movement control impairs capture of rapidly moving information. Disturbed ventral stream processing can impair recognition and/or route finding. Dorsal stream damage limits search in complex visual scenes and visual guidance of movement. Children with impaired vision from damage to the brain need structured history taking and assessment encompassing all elements of vision, to find and characterise all visual limitations. Educational approaches ensure that dimensions, contrast and location of materials used, fall within visual limitations. Each child's unique perceptual constraints are also identified, and catered for.

Key words: Prematurity. Cerebral vision impairment. Periventricular white matter. Neuroplasticity. Habilitation

How does the brain see?

Cerebral visual impairment (CVI) is the most common cause of visual impairment in children in the developed world. A large part of the brain is devoted to seeing, so it is not surprising that conditions that affect the structure or function of the brain can interfere with vision (Dutton & Bax 2010). At a basic level, the front of the brain 'thinks', 'understands' and 'behaves'; the middle 'feels and moves the body, and hears and understands language'; while the back 'sees'.

The picture formed by the eyes is converted into electrical signals and the visual information is sent to the back of the brain where it is sorted out in different ways:

1. Processing the picture

The back of the brain (the visual cortex in the occipital lobes) analyses the detail of the picture (measured as visual acuity); perceives colour; differentiates shades of grey (measured as contrast sensitivity); and assembles the field of view, with a clear central element and a more blurred periphery (the visual fields), and processes the speed and direction of moving imagery.

2. Guiding our movement and seeing lots of things at once

The top of the brain at the back (the posterior parietal lobes, connected to the occipital lobes by the dorsal stream pathways), contains an amazing system. For every moment of our waking lives, this area of the brain uses the incoming moving image data to guide our movements through our surrounding environment (Milner & Goodale, 2006). This requires mental mapping of the visual scene.

Reach out and pick something up. You ‘know’ that the object you reach for is out in front of you, but the picture you use to do so isn’t really, is it? It’s inside your brain. What is remarkable is that the picture out in front of you is so compelling that you believe it to be there, but you are actually moving through imagery constructed in your brain, fully expecting it to coincide with reality, which indeed it does, unconsciously!

Some people who have lost vision because of occipital lobe damage, sparing the part of the brain that processes the moving image, can move freely despite not consciously seeing (Goodale & Milner 2004). Functional brain scanning shows that they do this with their intact posterior parietal lobes.

To move rapidly and efficiently without bumping into people or obstacles, we need to accurately locate each item within the virtual imagery in our minds. This unconscious mental framework in the posterior parietal lobes underpins our ability to give attention to elements in our surroundings, providing the basis for the frontal lobes of the brain to make executive choices to choose where to look, where to move and what to pick up.

3. Recognition

The temporal lobes store visual memories and are where conscious recognition takes place. You recognise a friend in a group by matching her image to the memory store of people you know. To do this, you matched her face to the visual memory store of the people know. You find your way to a restaurant together and of course recognise everything on the way. Your comprehensive visual memory store built up in your temporal lobes since the day you were born achieves all this for you.

In addition to ‘higher’ visual functioning, there are myriad automatic visual systems. Examples include:

A. The time clock that dictates when we go to sleep and wake up is driven by perception of light and dark. (Children without vision can live a 26 hour day due to lack of this visual correction factor).
B. An automatic reflex visual system, alert to visual hazards, is located in the upper mid brain and thalamus.
C. The balance system is closely linked to the eye movement control systems.
D. The movement coordination system in the cerebellum helps in eye movement control.

Each child with cerebral visual impairment has a unique range of visual difficulties, due to any of these complex visual processes not functioning well.

Spectacles. What are they for and when are they needed in children with cerebral vision impairment?

Many children with cerebral visual impairment need glasses. Spectacles are worn for different reasons.

Short sightedness (myopia) is common in children born prematurely. Without glasses the child can see for near, but distant objects are out of focus, hence the term short sight. For some children, the printed page can be seen better without glasses because the magnification gained by being close to, is equivalent to using a magnifying glass. Glasses for short sightedness make the eyes look smaller.

Long sightedness (hypermetropia). In most children with long sightedness, the eye's focusing system compensates and brings the picture into focus, but in children with damage to the brain, the automatic focusing system (accommodation) may not work and even small amounts of long sightedness need correction (Saunders, Little, McClelland, & Jackson, 2010). This is true for many with cerebral palsy. They can be identified because the pupils of the eyes do not constrict as they should, when looking at a near item (Saunders, McClelland, Richardson & Stevenson, 2008). Long sightedness can also make the eyes turn in, and this too can be corrected by glasses. Glasses for long sightedness make the eyes look bigger and ideally they need to be worn most of the time.

Astigmatism occurs when the front of the eye has a slight rugby ball shape. The lens of the glass is shaped in a reciprocal way to compensate.

Children with low vision due to CVI commonly remove their glasses even when they clarify vision. One possible reason is visual fatigue.

Visual Limits

Society chooses to present visual information so that it is visible to the majority but not all, because when it falls below the limits for perception it cannot be seen. Children with longstanding low vision ‘know’ their vision is ‘normal’ and are not aware of what they cannot see. Unless the visual limits for each child are known, they will be given information they cannot see. Failure to respond can be misinterpreted as lack of ability or even stubbornness. Their functional visual limits therefore need to be identified and known to all.

Clarity of vision

Move this page back until you can just read it. This is your visual acuity, or clarity limit, used for medical diagnosis and follow up. Now read it as fast as you can. It is slow and difficult. It is much quicker and less tiring to read at your normal reading distance to make the text appear bigger using your functional reading acuity.

Educational material for a child with CVI needs to be well within the limits set by the binocular functional acuity to be seen easily throughout the day, even when tired. The minimum line thickness, and equal thickness gap between lines that have been measured to be seen at maximum speed, need to be known to ensure that all elements of picture and text are visible.

Contrast and Colour

Contrast perception can be markedly impaired in children with cerebral visual impairment (Good, Hou & Nocia, 2012), and needs to be checked. Colour perception tends to be maintained in all but the most severely affected, but practically, it is worth ensuring that pictures and toys are bright and clear, and that all colour boundaries contrast well. The visual world comprises myriad colours in multiple juxtapositions. Visual impairment can degrade low contrast colour boundaries, while not affecting more contrasting colours and shades. For example, a dark green frog on grass may be invisible, but the same frog on sand is obvious. By carefully observing what is and is not seen, one can build one’s own mental picture of a child’s colour and contrast vision capabilities.

Visual fields

The visual field is the area of a scene that can be seen at any one time. The nerve fibres running from the eyes to the brain are neatly arranged, when they are damaged, this results in well-known patterns of visual field impairment each with different functional consequences.

Hemianopia

The occipital lobe on the right ‘sees’ the left side of the visual scene (for both eyes), and *vice versa*. Damage on one side leads to lack of vision on the opposite side (in both eyes) or hemianopia, but in a good proportion of children affected from birth, some visual function develops, so that an affected child may be able to walk through a crowd without collision.

Damage to the top of the brain at the back (the posterior parietal lobes) on one side, can lead to lack of attention on the opposite side. As a rule of thumb, lack of visual attention to the left side tends to be more marked than lack of visual attention to the right.

Head and/or eye movements to the affected side tends to compensate for hemianopia, but not for visual inattention on one side for which rotation of the body is needed. Affected children often compensate by turning their chair slightly when sitting at table. Some more severely affected children may have both hemianopia and hemi-inattention. They do not see large moving targets on one side and head and eye movements do not compensate, so body rotation, or displacement of materials to the ‘good side’ is needed.

Eating food can be a problem because food can be left on the side of the plate. Turning the plate round can prove effective. Placing favourite food on the poorly attended side can motivate a child to develop exploration strategies.

Communication needs to recognise that someone on the visually impaired side may not be seen.

Mobility can be impaired and for crossing roads, oncoming traffic can be missed. Rotation of the body to the affected side may be needed, perhaps best taught by example.

Access to information can be limited by hemianopia or inattention on one side and the position in the classroom is selected for the teacher to be off centre to the sighted side.

Reading may require special attention, especially with later onset CVI. Right hemianopia can lead to words jumping into view, while left hemianopia can lead to difficulty finding the start of the next line. It can help to progressively move a finger down the left hand margin. Alternative approaches of reading text vertically or obliquely can help some who lose vision in later childhood.

Damage to the brain can cause lack of vision in any of the four quadrants of the visual field, with both eyes affected similarly. While quadrantic visual field impairment of this nature is less of a problem than hemianopia, it can still cause significant problems in any of the areas outlined above.

Lower visual field impairment

The visual pathways running from the eyes to the brain serving the lower visual field, are close to the water spaces in the brain called the lateral ventricles, and are not uncommonly damaged. A common scenario is the child with spastic diplegia affecting leg movement, who also has lower visual field impairment. When looking straight ahead she cannot see the ground ahead and chooses to walk with head turned down to check for obstacles and steps.

Lower visual field defects can vary in extent, between being complete with none of the ground ahead visible, to peripheral so that the ground a metre or so ahead is not seen. It is worth simulating a lower visual field defect for oneself, by holding a piece of card just below the eyes. It is quite disabling. A systematic approach, encouraging regular checking of the ground ahead can be helpful. Horse riding can afford new-found freedom. A tilted work station is also useful.

Visual field constriction

The commonest cause of apparent constriction of the visual field is difficulty attending to a lot of visual information at once, due to dorsal stream damage on both sides limiting the amount that can be seen. Decluttering can help a lot.

Central visual field impairment

A measure of low visual acuity gives an index of reduction in central visual function and denotes central visual field impairment. In some children, the more peripheral vision may prove more useful. The affected child may choose to look to the side of what his eyes appear to be ‘looking at’ to obtain the clearest picture. This is called eccentric viewing.

Combinations of visual field disorder

Poor central vision commonly accompanies hemianopia, as may lower visual field impairment. Vision may be present in only one upper quadrant of the visual field for both eyes. This intact visual field needs to be identified and used to best advantage.

Associated cognitive visual problems

Problems of recognition and orientation are quite frequently associated with hemianopia.

Limitations imposed by disorders of eye movement

Disorders of eye movement that impair vision can be divided into squint, impaired tracking, and to and fro oscillation, or nystagmus. Squint or strabismus occurs when one eye is turned in, out, up or down. The brain adapts to squint in children and usually ignores the image formed by the squinting eye. This impairs 3D vision which is normally brought about by the slight difference between the images formed by each eye. Hand-eye coordination skills are less when 3D vision is reduced.

Many children with cerebral palsy have disordered eye movement control. Fast eye movements allow us to look from one object to another, while slow eye movements allow us to follow moving targets. Either or both can be impaired. This can impair ability to see detail on moving targets.

In order to read, the eyes make four or five jerking movements to the right and jump back to the start of the next line. If tracking is impaired, reading is difficult and some children miss words out, or jump to the wrong line. Optimising print size and spacing can help compensate.

Nystagmus can accompany cerebral visual impairment and blur vision further. Many with nystagmus gain clearer vision by positioning their eyes where they move least, leading to a head posture, especially when studying detail. This can be lessened with enlarged print.

Seeing movement

The brain's computing systems that process the moving image are complex and can be disordered. Disordered eye movement systems can cause difficulty tracking moving objects. Head movements may compensate, but if a target moves quickly it may be missed because the eyes cannot lock on and follow.

Impaired movement perception due to brain damage (dyskinetopsia) is rare. There is sector of brain near the back on each side responsible for processing the moving image (the middle temporal lobes). In most children with visual brain damage, this part is preserved, and moving targets are seen, even if brain damage is severe. However, in a minority this sector may be selectively damaged. Although an affected individual can see static targets, moving objects may be invisible unless they move slowly (Guzzetta, Tinelli, Del Viva, Bancale, Arrighi, Pascale, R. &, Cioni, 2009). This condition tends to be permanent and needs to be recognised.

Inability to recognise an object by the character of its movement is another related deficit (Pavlova, Staudt, Sokolov, Birbaumer, & Krägeloh-Mann, 2003). Children with impaired movement perception often choose to watch TV programs with limited movement, such as the news reader, but show little interest in fast moving programs like cartoons. An educational approach that takes impaired tracking or dyskinetopsia into account, involves slow movement and gesture, and does not use materials requiring good movement perception.

Moving through the 3D world

Many children with cerebral visual impairment have difficulties using vision to accurately guide limb movements due to dorsal stream damage. This is called optic ataxia and may be a contributing element to cerebral palsy. In some, visual guidance of the feet is impaired. In others visual guidance of the arms and hands is problematic, or both may be affected (Dutton, Saaed, Fahad, Fraser, McDaid, McDade, Mackintosh, Rane, & Spowart, 2004). These difficulties can compound disability due to weakness and/or spasticity, or they may only be visual in origin. Affected children often use touch to compensate, running their thumbs along the piano for example, to locate the keyboard while using the fingers to play. An affected child may not be able to place pegs in a board unless the board is touching a part of his body. A line in the floor may be misinterpreted as a step, and floor boundaries may be carefully explored with the foot (or even the hands) before they are crossed (Dutton et al., 2004). Difficulty negotiating steps and kerbs is typical. Going up is often easier. The same applies to kerbs. Typically the foot is lifted too high or too early when encountering a step. Any accompanying lower visual field impairment exacerbates the disability.

Other children can have problems accurately reaching for things. It can be difficult to determine whether the problem relates to weakness, poor coordination, or low vision. Typically, reach is intermittently accurate. The hand is not accurately pre-configured to the shape or orientation of what is to be picked up. The gap between the fingers is too wide, or the outstretched hand is brought down upon the object, or reaches beyond the object to gather it up.

Practical approaches require repeated practise. Supplementing visual guidance with touch, in a manner akin to blind techniques, may occur naturally, or may need training. Quiet soft play areas provide opportunities to learn to move through 3D space without injury.

Crowding and complexity

Opening too many programs can slow a computer with limited RAM, and it crashes when there is not enough active memory. Our minds function similarly. Watching television while doing homework usually prolongs the task, while additional conversation prevents its completion. Incoming visual information is compartmentalised and processed simultaneously and unconsciously, providing the selection for the frontal lobes to choose from.

Posterior parietal lobe or dorsal stream damage, limits the amount of spatial information that can be handled at once. Items located against background pattern or within foreground clutter can be difficult to find. A parent in a group may not be found. A toy may be found on a plain carpet but not on a patterned one, or from amongst other toys. A pile of clothes may need to be spread out to find a chosen item. Keeping clutter to a minimum is key.

Impaired simultaneous perception (simultanagnosia) can give the impression of tunnel vision. Visual acuity may be normal for single letters but reduced for words. This is due to crowding of the visual information. Text may appear jumbled. The approach to take is analogous to braille, where information is presented sequentially. The degree of text enlargement and spacing that minimises the effect of crowding needs to be estimated for each child. Magnifying aids diminish crowding. A spectacle correction for long sightedness magnifies a little, and allows text to be held closer. A card with a slot cut in it (a typoscope) masks surrounding text. For arithmetic, visibly squared paper helps to locate numbers, and the number of problems per page that can be handled is identified. Gradual spontaneous improvement over a number of years tends to occur, with improving ability to handle increasing amounts of visual information. Regular review ensures that educational approaches are matched to ability.

Recognition

The visual brain allows us to rapidly recognise and understand what we see, as well as imagine. When a newborn baby looks around, the brain, which is a remarkably active self-programming computer, is enabled. At birth the visual brain resembles a new library with few books but many shelves destined for specific book collections. The face perception centre is pre-programmed. The newborn infant spends more time looking at a face, than a jumbled pattern of two eyes, a nose and a mouth. As each new face is seen, the picture is stored for subsequent recognition. Repeatedly seeing the same face enables the young child to progressively recognise family members. As the baby explores, the visual information gains meaning and is progressively stored, but impaired visual input limits what can be learned through vision. When visual acuity is low, the young child usually compensates by getting closer, this magnification through proximity compensates in part. In addition, visual brain damage can also affect the ‘computing units’ needed to know and understand what is seen.

Recognition of people

When you walk down a busy street, and recognise and greet a friend, the amount of computing done by your brain is phenomenal. Each person is compared with your stored image bank of hundreds of people, and an almost instant conclusion is reached that you haven't met that person before. When you encounter the person you do know, a match is made. During subsequent conversation one can respond to a wide range of nuances of facial expression and reciprocate accordingly. This needs sufficient contrast sensitivity and acuity to be assimilated.

Children with brain damage affecting the recognition centres in the temporal lobes can show evidence of impairment of both face recognition and the ability to interpret facial expressions (Houliston, Taguri, A.H., Dutton, G.N., Hajivassiliou, C., & Young, 1999; Fazzi, Signorini, Bova., La Piana., Ondei., Bertone, Misefari, & Bianchi, 2007; Ortibus, De Cock, & Lagae, 2011) despite sufficient visual acuity. Inability or disability in recognising friends is socially disabling. When compounded by not being able to react appropriately to facial expressions, a sense of alienation can result. When teaching a child with these difficulties one needs to be aware that one is recognised by the sound of one's voice and one's facial expressions may not be informative. One's face may therefore not be looked at. When necessary, one needs to refer verbally to one's emotion. (This is also true for all children with insufficient visual acuity to see faces, for whom it is essential to identify and use their face and facial expression recognition distance.) Impaired face and facial expression recognition can be incorrectly attributed to the impaired theory of mind found in autistic spectrum disorder.

Recognition of shape and form

To differentiate one car from another the brain has to do the same task as it does for faces, but a different part is used. Focal acquired brain damage, such as that following encephalitis can lead to problems recognising shapes, but with an intact ability to recognise faces. This can be relevant to maths where an affected child may have numeric skills but be unable to appreciate geometry through vision. (Feeling geometric shapes, or strings representing these shapes, and remembering their haptic characteristics can in some, help compensate.)

Damage to the temporal lobes can rarely impair the ability to read text causing alexia (inability to read) or dyslexia (selective impairment in reading in the context of normal intelligence in other aspects of intellectual function). The part of the brain responsible for converting the written word into language comprises the language centre, which in most is on the left side of the brain. If there is damage to the left occipital lobe, as well as damage to the pathway between intact right occipital lobe and the language centre, alexia results. The damage on the left also causes right hemianopia (O'Hare, Dutton, Green & Coull, 1998). There is evidence that phonetic reading is particularly impaired, however 'look and say' methods may help children with this rare condition.

Orientation

Orientation is not solely a visual skill as those with no vision can be fully orientated by virtue of their other senses. However, in the sighted, vision and visual memory play a significant role. Orientation is necessary to navigate from one place to another. The same skills are needed to locate things in cupboards and drawers, and to know where one has put things down. Like face recognition, orientation requires the ability to retain visual information, so as to compare it with the current scene. If the part of the brain used for orientation is not functioning well these skills may be impaired (Houliston, Taguri, Dutton, Hajivassiliou, & Young,1999; Dutton et al. 2004). This part is close to the part used to recognise faces (the fusiform gyrus of the right temporal lobe) and close to the part serving the left visual field. This means that children with left hemianopia merit a check for face, and facial expression recognition, as well as orientation skills.

Visual fatigue

There are many jobs that entail detailed inspection. For example, looking down microscopes, reading X-rays and quality control work. These tasks involve mental effort, and inaccuracies can creep in when tired. Breaks are scheduled to maintain performance. Similarly, children with cerebral visual impairment can become fatigued, and performance drops off when they have worked hard. The visual system is especially fatiguable in children with very limited vision. There can be periods of lucidity when the visual system appears to function efficiently, interspersed with periods when vision appears limited or absent.

Children with less severe visual difficulties tire more easily if what they are being shown is a struggle to see by being at their limit of perception. For such children who fatigue quickly, visual information needs to be clear, well spaced, of optimal size, with minimal clutter and pattern, enhanced by ensuring that verbal communication attracts interest, is clear, well sequenced and paced at optimal speed to maintain attention. By minimising the amount of redundant information a child has to handle, and ensuring that everyone is aware of the limits of detail, complexity and speed of communication that the child can cope with, the number and duration of periods during which the child becomes inattentive can be kept to a minimum.

Visual Memory

If visual memory is impaired due to damage to the temporal lobes and adjacent areas, it is not surprising that tasks like copying are difficult. One approach to consider is to encourage the child with poor visual memory to speak out loud (initially, and then to speak with imagined speech), about what they have seen, to recruit auditory memory as well.

Thinking in threes – an approach to mastering the portfolio

The severity of CVI can range widely between profound and disorders of visual perception only. The subject is complex, but it is important for the educational assessment team to address the issue fully when assessing an affected child and planning management. This is helped by a mental checklist. Thinking in threes, provides a practical approach (Table 1).

Table 1. Topics, grouped in threes, to hold in mind when assessing and planning management of a child suspected to have CVI.

1. Visual system

A. Primary vision: I. Acuity; II.Visual fields; III. Seeing movement

B. Dorsal stream: I. Visual guidance; II. Visual search; III. Visual attention

C. Ventral stream: I. Face recognition; II. Shape recognition; III. Orientation

2. Principal Visual functions

I. Guidance of movement : arms / legs

II. Access to information: near / distant

III. Social interaction: near / distant

3. (Re)-Habilitation

I. Compensation

II. Substitution

III. Restitution (of functions lost following complications eg a blocked shunt)

4. Additional elements

I. Contrast sensitivity perception.

II. Visual memory

III. Visual imagination

The visual system is made up of *three principal components*: Primary visual processing, the dorsal, and the ventral streams. For each component there are *three principal aspects of vision* that can be impaired in any combination and any degree. These nine principal visual functions serve *three principal visual needs*, visual guidance of movement, ability to access information, and the facility to interact socially.

This approach accords 27 concepts that can easily be brought to mind when addressing the *three approaches to (re-)habilitation* namely:

Compensation for the visual difficulties, such as enlarging or magnifying educational material for low visual acuity, or reducing the number of elements to be seen to cater for dorsal stream dysfunction.

Substitution includes the use of tactile approaches such as braille for material that cannot be seen due to low vision, or recognised due to object and shape agnosia.

Restitution entails training to restore lost functions and is instituted when, for example, seizures, or a blocked shunt have led to deterioration of visual skills that can potentially be restored.

Finally, there are three additional elements to add into the mix, namely impairments of contrast sensitivity, visual memory, and visual imagination. Table 2 lists some of the difficulties due to cerebral visual impairment along with approaches that can be used to help.

Table 2. Table outlining the visual difficulties that children with cerebral palsy can have and approaches which can help them.(Adapted from [2]: McKillop E, Dutton GN. Impairment of vision in children due to damage to the brain: a practical approach. *British and Irish Orthoptic Journal* (2008), 5, 8-14)

Problem	**Approaches**
Reduced clarity of vision.	Enlarge text Double space text Present text in small sections. Reduce distractions Limit tiredness
Colour vision and contrast sensitivity impairment	Bright and clear educational material and toys. Distinct colour boundaries Good contrast
Lack of vision or attention on one side	Tracing of text with a finger or ruler Turning text vertically or obliquely Appropriate seat position in classroom Turning of head to check the hemianopic side

	Careful guidance around new environments Training in crossing roads Turn plate to eat food
Lack of vision down below	As with hemianopia Regularly looking down to check the ground ahead Tactile guide to ground height
Impaired ability to move the eyes	Movement of the head Enlarging text Double spacing text Tracing of text with a finger or ruler
Impaired ability to see movement	Television programmes with limited movement Educational material with limited movement Careful training or guidance in crossing roads.
Difficulty finding a toy in a toy box or an item of clothing in a pile or wardrobe	Separate storage of favourite items Organised storage systems Always store in same location Avoid clutter Colour coding and labels
Difficulty finding an object on a patterned background.	Use plain carpets, bedspreads and decoration.
Difficulty finding food on a plate	Avoid patterned plates Avoid sauces/ gravy Separate food portions
Problems seeing a distant object	Use zoom on video/ digital camera to view
Problems reading	Enlarge text Double space text Masking surrounding text Computer programs to present information
Difficulty finding someone in a group.	Wear obvious identifier Always stand in same location Waving Speak
Tendency to get lost	Training in seeking and identifying landmarks Visit new locations at quiet times
Problems with floor	Avoid patterned floor surfaces

boundaries, steps, kerbs and uneven surfaces	Bannister Mark edge of stairs Good lighting Tactile guides to gage the height of the ground Approach obstacles with “Look- Slow- Check- Go” Activities to improve coordination
Inaccurate visually guided reach	Reaching beyond an object to gather it Activities to improve coordination Occupational therapy
Difficulty ‘seeing’ when talking at the same time	Limit conversation when walking Identify obstacles by tactile stimulation
Frustration at being distracted	Limit distraction Minimise background clutter Minimise background activity. Quiet table at school
Difficulty recognising people and photographs	Introductions Training in identifying voices Consistent identifiers worn Training to recognise identifiers
Difficulty recognising shapes and objects	Training to identify and recognise identifiers Training in tactile recognition
Difficulty reading facial expression	Training in recognising facial expressions Expression of mood by tone of voice Explanation of mood in words
Getting lost in known places	Training in orientation. Encouraging leading Incorporating landmarks in Mnemonics /Poems
Difficulty in new environments	Training in orientation. Encourage exploration –Visit at quiet times –Hide and Seek –Treasure Hunts
Visual fatigue Prolonged visual processing	Minimise clutter Reduce distractions Reduce detail and complexity Well-earned breaks

Social problems	Good understanding and support at school Identify problems and solutions Encourage child to overcome them Well known informed peer group Find activities child enjoys and can excel in

Conclusion

Vision impairment due to damage to the brain is common in children. Those affected can be identified and managed well by being alert to the possibility that it may be present, and carefully taking a history and assessing all in whom it is suspected.

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Mathematical connections: Making it happen for students with vision impairment in inclusive classrooms

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Abstract

Some learners with vision impairment may lag behind their sighted peers in numeracy because their impairment impacts on their ability to learn and understand mathematical concepts and this in turn inhibits their ability to use those concepts in everyday life. Numeracy, or the ability to use mathematical concepts in everyday life is a basic necessity for all learners. This paper reports two case studies that examined the ways numeracy is learnt by young people with vision impairment in inclusive classrooms: one student with low vision and one functionally blind. Results indicated that the two students were achieving at the same level as their peers in mathematics and they were succeeding in learning numeracy. Modifications were made to materials and teaching approaches and these factors impacted on their achievements, as did the collaborative team approach that was evidenced in both schools. These case study findings add to the body of knowledge on current practices in numeracy in inclusive settings.

Keywords: Vision impairment, blind, no useful sight, numeracy, mathematics, curriculum, pedagogy

Numeracy is an important educational priority in our complex technological society. In societies where mathematics plays a significant role, it is important to develop “critical numeracy” (Stoessiger, 2002, cited in Hawera & Taylor, p. 3). According to Kapperman, Heinze and Sticken (2000, p. 370) mathematical understanding is “essential for full participation in society”. Rosenblum and Herzberg (2011) agree, stating that if young people with vision impairment have a solid educational foundation in mathematics they are able to solve the simple arithmetic problems that arise in their daily life. The real issue here is the complex, visual nature of mathematics and the impact of severe vision impairment on numeracy learning. It is not about whether students with vision impairment can succeed in developing mathematical understanding, but rather, how skilled teachers enable this learning to occur. Indeed developing students' understanding and competence in working mathematically should be at the forefront of sound educational practice.

What is Numeracy

According to the Australian Curriculum, Assessment and Reporting Authority (ACARA, 2012, p. 1), "Numeracy involves students in recognising and understanding the role of mathematics in the world and having the dispositions and capacities to use mathematical knowledge and skills purposefully". The Authority goes on to state: "Students become numerate as they develop the skills and confidence to use mathematics at school and in their lives beyond school. In the context of schooling, numeracy involves students recognising and engaging with whatever mathematical knowledge and skills are needed for understanding in all learning areas" (ACARA, 2012, p. 21). Other definitions of numeracy refer to it in terms of the "the use of numbers in daily life, the ability to think in quantitative terms in order to complete tasks and the inclination to solve problems using number" (Munn, 2005, p. 62). Many writers emphasise the role of mathematics beyond school. Munn, for example, proposes that "the essential criteria for numeracy (as distinct from mathematical ability) concerns the use of number to solve problems in daily life and the motivation of the numerate person to engage in numbers" (p. 62).

Goos, Dole and Geiger (2012), refer to numeracy as a relatively recent idea and explain that although many English countries use the term numeracy, in the USA it is more commonly referred to as "quantitative literacy or mathematical literacy". They refer to Steen (2001) who challenged the field and suggested that numeracy should be part of all school subjects and learned in a range of contexts in order to be useful to students. He also commented on quantitative literacy which he defined as:

> *the capacity to deal with quantitative aspects of life, and proposed that its elements included: confidence with mathematics; … logical thinking and decision-making; use of mathematics to solve practical everyday problems in different contexts; number sense and symbol sense; reasoning with data; and the ability to draw on a range of prerequisite mathematical knowledge and tools. (Goos, Dole, & Geiger, 2012, p. 3).*

Goos, Dole and Geiger (2012) propose that people who are numerate have mathematical concepts, skills and knowledge which they use. They are also able to engage with problem-solving strategies and make realistic estimations.

The Visual Nature of Mathematics

Rosenblum and Herzberg (2011, pp. 404-5) assert that mathematics depends on visual knowledge. They explain that this is “because visualising abstract mathematical concepts allows individuals to understand both what is within sight and what is not within sight”. They maintain that vision enables individuals to process pieces of information simultaneously and they cite Kamei-Hannan (2009) who states that “the eye can more quickly and efficiently take in pieces of information simultaneously than can the fingers. Kapperman et al. (2000, p. 371) agree stating that because of the visual nature of many aspects of mathematics, and the “abstract nature of many essential [mathematical] concepts” (p. 392) students with vision impairment “need to be able to integrate individual units of information mentally into an abstract whole”.

Mathematics: Students with Vision Impairment

Some research has shown that students with vision impairment have greater difficulty in achieving in mathematics than their sighted classmates (Cavenaugh, 2006; National Science Foundation, 2009, cited in Beal, Rosenblum, & Smith, 2011). The impact of vision impairment and the critical role it plays in the development of concepts that are basic to mathematics learning is also widely recognised (Cavenaugh, 2006; McDonnall, Geison, & Cavenaugh, 2009; National Science Foundation, 2009). Clearly, because of the visual nature of many aspects of mathematical learning, students with vision impairment do not have access to important information that underpins the development of conceptual understanding so important in numeracy.

Ahlberg and Csocsán (1999, p. 549) propose that children with vision impairment differ from their sighted peers in their development of numeracy skills claiming that this difference could be attributed to the various ways these children gain experiences via their senses rather than to their cognitive ability. They believe that students with vision impairment are able to gain an understanding of mathematical concepts “through the use of real objects and manipulatives” (p. 549). They noted that young students with vision impairment frequently have difficulty with the simple arithmetic problems that arise in their lives daily. They question whether or not these difficulties could be avoided by pedagogical interventions.

Students with vision impairment potentially have the ability to develop the same range of mathematical skills as their peers, according to Kapperman and Sticken (2003), but in many cases they do not have the opportunity to develop these skills. Rosenblum and Herzberg (2011, p. 403) agree, stating that according to the United States National Council of Teachers of Mathematics (NCTM, n.d.).

> *...all students can learn mathematics if given high-quality instruction, challenging content, and appropriate accommodations, and well-prepared, knowledgeable teachers must have adequate resources and support to deliver high-quality instruction.*

The Problem

Some of the literature clearly shows that a severe vision impairment impacts strongly on a student's ability to understand mathematical concepts. It is, therefore, critically important to recognise that when students with severe vision problems have fewer cognitive resources available for problem solving, incomplete conceptual understanding of mathematical information and materials that are not fully accessible to them, they will have significantly greater difficulty in mathematical learning than sighted classmates (Beal, Rosenblum, & Smith, 2011). Regular classroom teachers are not always aware of the nature of the student's vision loss and the limitations this imposes in relation to learning mathematics. Neither are they always aware of the need to re-evaluate their approaches to teaching, the value of support from Specialist Vision Support Teachers and the need for appropriate modifications, equipment and materials.

Aim of the Study

The aim of this paper is to describe the ways numeracy is acquired and developed by two students with vision impairment. This aim was met through the development of two case studies of children with vision impairment who each attended their local school.

Research Questions

1. How is numeracy acquired by two students with vision impairment, one with low vision and one who is functionally blind (who requires braille for reading and writing).
2. In what ways do their teachers develop numeracy in these two students with vision impairment?
3. What teaching practices do teachers engage in when working with these two students?
4. How do teachers assess and report the progress of these two students in numeracy?

Methodology

The research adopted a qualitative methodology and employed a case study approach. The purpose of a case study is to investigate a contemporary phenomenon within its real-life context. Case studies capture the reality of participants' lived experiences as they are enacted at a particular moment and in a particular place (Levin, 2008, p. ix). The case study enables deep exploration of a specific setting or context (Creswell, 2007). In an educational context, case studies can be used to examine how teachers operate and what learning occurs.

This research examines two case studies. One focused on the learning of mathematical concepts of a student with low vision, and the second on the learning of mathematical concepts of a student who is functionally blind. The research object was to examine the ways both students learnt mathematical concepts in their school settings. Each school was selected because of its inclusive approach and after consultation with personnel from the relevant Departments of Education. Ethics approval was gained from the Department of Education in each of the two states and the Human Ethics Committee of the University of Queensland .

Procedure

Having established the focus, the researcher formed questions about the area to be studied and determined the framework for investigation. This framework comprised information about the school and its context, the characteristics of the students, and mathematic learning information. Data collection involved interviews, observation of the students in class, informal discussions with students and teachers and analysis of school documents. Three days were set aside for collection of data in each school. The researcher observed teaching practices, student participation, methods of providing access to the curriculum, the use of technology and the equipment, resources and materials used.

In this study, structured interviews were conducted with the principals, teachers, and support staff. Copies of the interview questions were distributed to participants prior to the interviews. The questions were asked in sequence and probing comments encouraged the interviewees to elaborate when necessary. The face-to-face interviews were audio recorded and lasted between 45 and 60 minutes. The topics covered were related to the participants' perceptions and understanding about the way the two students with vision impairment learned mathematical concepts, the ways classroom teachers and support staff supported their mathematical learning, the ways progress was monitored, assessed and reported to parents and the initiatives the school had taken to meet the student with vision impairment's learning needs. The interviews were transcribed and analysed according to the themes designed by the researcher.

Data Analysis

Two analytical approaches were used in the inquiry, the first a thematic analysis of the interviews and the second an interpretive approach to analysing observations in the classrooms. In this way, emergent themes within and across the transcripts were identified and further interpreted in terms of what was observed and documented. Where thematic analysis can tend to overly focus on what was stated in the interviews, the benefit of coupling such an analysis to observations enables the researcher to look more deeply and consider meanings that are expressed between the lines.

Participants

Case Study 1 involved David (pseudonym), a nine-year-old boy, who was fully included in a Year 4 class at his local Primary School. David used his peripheral vision because of a significant central field loss, which was due to widespread atrophy (degeneration) of his retina (light sensitive layer at the back of the eye). He presented with nystagmus (involuntary eye movement), eccentric viewing and had difficulty in fixating on an object of regard. He was not totally blind, but his central vision loss and other vision problems meant that his residual vision was too poor to be of use for academic tasks and so his major learning senses were hearing and touch.

Case Study 2 involved Jarrad (pseudonym) an eight-year-old boy who was fully included a Year 2 at his local Primary school. Jarrad had Marfan Syndrome. This inherited condition resulted in severe vision impairment, accelerated growth with resultant weakening of the tissues of the body. The condition is characterised by abnormally long, slender fingers, toes and other bones, congenital heart problems and general muscular underdevelopment. Jarrad's vision was corrected to 6/9 in the right eye and 6/18 in the left. He had dislocated lenses (lens was pulled out of position by faulty fibres) consistent with Marfan Syndrome. Jarrad's distance vision was blurred and he lacked depth perception. Even after correction he still needed to sit close to any visual source.

Findings

In this section, the results of the research are presented. These have been organized according to the framework established by the researcher. The findings are presented under the headings designed by the researcher: *the program*, *approaches and strategies, curricula, adaptations and modifications, teaching strategies, assessment, technology and support*.

Case Study 1: David

The purpose of *Case Study 1* was to examine the ways David learned mathematical concepts with no useful vision, and the approaches to teaching and the accommodations and modifications that were in place to facilitate his learning.The school David attended was a large metropolitan primary school that catered for students from Pre-Primary through year seven. Located in a new residential area in a large city in Australia, the school served a recently settled, diverse community both socially and economically

The Mathematics Program

The Mathematics program at the school aimed at making Mathematical learning positive and relevant to the individual by providing the students with appropriate concrete experiences relevant to six strands: space, measurement, chance and data, number, algebra, and working mathematically. The program was based on a belief that Mathematics involved investigating patterns, understanding relationships, observing and using mathematical objects.

The Principal believed that teachers needed to have an open attitude to what learning is and how it happens, particularly when they were working with students with vision impairment. He stated that “imagination, insight and awareness as well as sound teaching skills were of prime importance in working with all students irrespective of any differences or disabilities.”

Approaches to Learning Mathematical Concepts

David’s class teacher preferred a problem-based approach to mathematics using real life activities, thereby emphasising the use of mathematical concepts in everyday life. She developed many “real” maths situations which included such activities as estimating the size of an area (e.g., an oval) and then measuring it. David’s teacher argued that students need to be guided to think and reason and that activities should be “real, relevant and realistic” to students. Her aim was to teach numeracy in a meaningful way and use real life experiences which involved problem solving. She preferred to design her own work sheets rather than use a text.

David worked on the same mathematics curriculum as his classmates. His teacher was aware of the need for diversifying instruction in order to meet the various learning styles and disparate needs of her students. She believed in “outcomes-based education” and curriculum that is child-focused and driven by students’ interests.

David needed print material and diagrams to be transcribed into braille and tactile format. In addition to his Perkins brailler he required an electronic brailler, which when linked to a printer made it possible for his class teacher, who was unable to read or write braille, to decipher and mark his work. When braille was unavailable, David was dependent on audio materials or having someone read the print to him. Although obvious adaptations to the classroom environment and teaching strategies were made, there was clearly an expectation that David was “just like the other students” (class teacher).

Teaching Strategies

According to David’s teacher, much emphasis was placed on working in groups and pairs. The teacher also employed strategies that increased David’s ability to participate in the class more easily, for example, to ensure David understood what was being taught, his class teacher used her voice and verbalised as she wrote on the blackboard. Time was spent working with David individually, either by the teacher or the school assistant. His teacher reported that he had no difficulty in keeping up with his peers academically and was ascertained as achieving in the upper year four range in numeracy. Her view was that he simply needed specific modifications and specialised equipment to carry out academic tasks.

David's teacher did not view subject areas as discrete and believed in integrating content across curricula as much as possible. One task the teacher set while I was observing was to ask each student to write on a slip of paper a question that he or she wished to investigate. David's question was, "How tall would they be if we stacked all of the planets on top of each other?" Appropriate books were borrowed from the library. Braille books relating to this area were provided by the Specialist Vision Impairment Service for David, so that he could work independently. Class time was set aside for the research.

David's teacher also believed that the students enjoyed competition so she designed games to develop their skills in addition, subtraction, division and multiplication. One of these activities was a regular *Tables Challenge*. David excelled at this activity and rated highly on the chart that was kept in the classroom.

David's class teacher provided the students with much flexibility and opportunity for choice. Block time was set aside each day, for students to work on various curriculum areas dividing their time between the various tasks. They had clear areas to be covered and tasks to complete, but they could do the work in the order they wished. David could choose to work alone, with a peer or a group of peers, just like his classmates.

Assessment, Recording and Reporting

David's class teacher used both formal and informal procedures to monitor David's progress in numeracy. Observation, worksheets, oral and written number computation tests were some of the procedures used. David's teacher kept detailed records to ensure that she could keep an eye on problem areas and follow them up. Formal tests were usually presented to David in braille so that he could work individually. However, if this was not possible, assessments were oral and he produced the answers on a brailler which enable him to make a print copy for his teacher. David was not given extra time in tests if they were brailled, however, if his teacher needed to read the test to him he was given an extra ten or fifteen minutes.

Technology and Equipment

Because David had no useful sight, he relied on a range of technical equipment to enable him to participate actively in learning and to gain access to the numeracy curriculum.

He used a Perkins brailler, computerised brailler and talking calculator for Maths. He also had equipment that had been modified with braille or tactual markings (rulers, set squares, mathematical cork board [with tactile overlays for graphing], fraction kits and a raised line drawing kit [for drawing tactual diagrams]). The raised line drawing kit and tactual drawing grid enabled David, his teacher or the teacher aid to produce graphs, diagrams and tactual representations quickly and easily. Concrete materials such as blocks, a metric trundle wheel, Cuisenaire rods with tactual markings, real money, and three dimensional shapes and blocks provided David with another dimension to his learning and assisted his understanding.The talking calculator enabled him to work without assistance just like his sighted peers and contribute confidently in activities that involved numerical calculations.

Support Staff and Services

A Specialist Vision Support Teacher from the Education Department's Vision Education Service worked in numeracy with David and his class teacher. The Specialist Vision Support Teacher's aim was to ensure that mathematical concepts were understood and he worked with David to ensure this occurred. He explained that his role was to establish what David needed to succeed in learning, to communicate with his class teacher to ascertain areas of difficulty and concepts needing work. He maintained David's braille skills, updated them and when needed, and provided specialised equipment and materials in braille and tactile formats.

Jarrad: Case Study 2

The purpose of *Case Study 2* was to examine the ways Jarrad acquired numeracy learning with his severe vision loss, and the approaches to teaching, accommodations and modifications that were in place to facilitate his learning. The school he attended was a medium sized metropolitan primary school that catered for students from Reception through year seven. Located in an older but quite affluent area in a large city in Australia the school catered for the children of high to middle income earners.

The Mathematics Program

The Mathematics program at the school attended by Jarrad, the student with low vision, was based on a problem solving approach to numeracy designed to give all students the best opportunity to develop an understanding of mathematical processes. The teachers believed that mathematics was not just about exercises in a maths text, they considered it to be about real life problem solving. They focused on children's ability to use mathematical knowledge in working out everyday situations. They challenged students' thinking and encouraged them to discover mathematical relationships.

In numeracy, Jarrad worked on the same curriculum as his sighted classmates. Curricula were seen as integrated across subject areas. The numeracy curriculum was designed to provide students with knowledge and understanding of space, measurement, number, algebra and chance and data. Jarrad had a Negotiated Education Plan (NEP) that had been designed to improve his learning outcomes.

Approaches to Learning Mathematical Concepts

No particular programs were used for mathematics teaching. There was emphasis on an open-ended task approach using concrete materials to develop concepts, impart mathematical knowledge and teach skills. The teachers believed this approach would enable students to draw on appropriate knowledge and skills to problem solve. They also believed they needed to assist students to be selective about how to problem solve and what materials to use.

Jarrad needed to wear his glasses at all times and required bold clear print and illustrations. He needed verbal cues because he missed the subtlety of facial expressions. To keep up with the other students he required extra time on some tasks, books with dark lines, dark black pens or pencils and borders around the edge of white paper when he was working on a white surface. Large print materials enabled his to read work more comfortably. Jarrad had special maths equipment. The teacher used clear, strongly contrasting materials, modified his approach to teaching, and gave clear instructions. Jarrad found some areas of mathematics a little difficult and, therefore, needed to work from the concrete to abstract. He used concrete materials (blocks or counters) for all mathematical operations. His seating position was important. He needed to be directly in front and close to the non-glare whiteboard. Black markers and clear print were necessary to give him the best chance to see what the teacher had written. The over-head projector made it very difficult for Jarrad to see a clear image. To overcome this, he was given an individual print copy of what was on the screen.

Teaching Strategies

The teacher involved Jarrad in class through group work, questioning and including him in discussions. Planned open-ended activities were designed to cater for the range of abilities in the class and this benefitted Jarrad. The teacher used a direct teaching approach to introduce new concepts. She worked with the class sitting on the floor at the front of the room and made sure that Jarrad sat at the front so that he could see the board, manipulate materials and see demonstrations. The teacher engaged students in activities and group problem solving.

One task the teacher set was to ask students to compile a list of six things they would like to get for Christmas. They then had to estimate how much each would cost. They were told they only had $50 to spend, so they had to check to see if they were within budget and if not they had to calculate how much they were over or under. They were then given toy catalogues and told to check the prices and compare them with their estimations. This exercise involved estimation, addition and subtraction of money and prioritising.

Assessment

Jarrad's numeracy skills were assessed in the same way as were his sighted classmates. The teacher used both formal and informal methods of assessment: observation, questioning, work sheets, tests and anecdotal records. He planned learning outcomes and measured the students' progress against them. He emphasised the importance of assessment, and its link to teaching. Parents were informed of their children's progress on a regular basis.

Technology and Equipment

Jarrad used a calculator to check his work when appropriate. His teacher ensured that he calculated the answers first and then verified them. In this way he could monitor Jarrad's understanding of the processes involved. Because he needed to get very close to his work, Jarrad also used a sloping desk top that could be set on top of his desk. This reduced glare as well as the strain on his back and neck. He used dark lined paper and soft black pens and pencils. His maths equipment had strongly contrasted markings.

Support staff and services

Jarrad received regular support from a Specialist Vision Support Teacher from the School for Students with Vision Impairment. The main focus of the Vision Support Teacher was to collaborate with the class teacher, advise on the nature of Jarrad's vision loss, its impact on the way he learned and his access and learning needs. She supported the class teacher's work in numeracy by highlighting aspects of the Maths program that had potential to cause difficulties for Jarrad. She recommended approaches to teaching mathematical concepts. If Jarrad was having difficulties she worked with the class teacher to examine such factors as seating, lighting, glare, print size, teaching approaches and concept understanding. She also provided materials in appropriate formats (large well spaced print, good contrast, simple diagrams, and a ruler with clear, contrasting numbering).

Discussion

It was evident from both studies and the related professional literature that while both students with vision impairment accessed the same curriculum as their sighted peers, they clearly needed specific modifications and accommodations to facilitate their learning. Factors that impacted on the achievement of both learners included the nature of the students' vision impairment, the complexity and visual nature of mathematics, the modifications to assessment tools, the skill and strategies implemented by teachers and the support provided by the Specialist Vision Support Teachers. To ensure that these two students had access to numeracy programs modifications were needed to the physical environment, pedagogy, learning materials, time, technology and assessment. Suitable media and resources also clearly played a part in their successful learning outcomes.

In general it was found that the two students with vision impairment followed the same numeracy curriculum as their classmates and there was an expectation that they would achieve learning outcomes consistent with their classmates. No variations occurred in content, however, variations occurred in how these students demonstrated their knowledge and skills, in terms of communication modes (braille/large print) and the use of technology. The teachers in the study believed in a curriculum that was child-focused and driven by the students' interests.

Teacher participants in the study believed that in the main students with vision impairment needed skilled direct teaching, guided discovery, and experiential learning. In designing teaching approaches they recognised that there were particular issues with teaching numeracy that related specifically to these students. They verbalised as they wrote on the black/white board. They emphasised the need to allow more time on tasks, introduce new concepts through everyday situations, use concrete materials, and organise instruction to follow a developmental sequence. Both teacher participants stressed the need to diversify approaches to teaching, and adapt pedagogy to meet students' learning styles. They built on students' strengths, made use of prior learning, and engaged them in real experiences and activities. Technology was acknowledged as important in assisting these students to contribute confidently in activities that involved numerical calculations and to record work. Small group work following the introduction of particular concepts facilitated further exploration of the concepts and an opportunity for problem solving and cooperative learning.

The teachers emphasised that they encouraged independence and assisted their students to develop self-sufficiency. The idea of scaling-down requirements so that students were not overwhelmed by the task was also highlighted. They made it clear that more discussion of concepts and processes was needed to compensate for the lack of incidental learning and to ensure that under-developed concepts were catered for.

Ongoing assessment of mastery and progress over time was recognised by both teachers as critical to the development and delivery of numeracy learning. Both students were generally measured against key learning objectives set by their teachers. Various forms of both formative and summative assessment were used, some were school-based tools and others were teacher-designed tests. The teachers also emphasised the importance of providing prompt feedback to correct errors and facilitate learning. Formal assessments were carried out as needed. Both students completed the same assessment tasks as their classmates, however, modifications were made in terms of time, presentation and media used.

Technology provided opportunities for the students to gain access to numeracy learning and to demonstrate their competencies. Technology and assistive devices played an important part in the numeracy learning of the participant with no useful vision. This student used various braille devices, a talking calculator, an audio recorder and a range of mathematical equipment. Calculators facilitated the student participants' independence, however, their teachers ensured that before they used them they understood the mathematical processes which were taught using concrete materials.

Conclusion: What Approaches Work and What can be Achieved?

The findings indicated that a collaborative team approach involving teachers, Specialist Vision Support Teachers, parents and students, books and materials in appropriate media and the use of specialist equipment and technology facilitated mathematics learning for these two students with vision impairment. Relevant, experiences, using concrete materials were advocated by the two school principals and the class teachers. In relation to students with severe vision impairment, ongoing debates continue to exist about pedagogy, appropriate learning media, curricula, programs, assessment and support. It emerged from the findings, however, that although students with vision impairment accessed the same curriculum as their sighted classmates and expectations for their learning outcomes were consistent with that expected of their peers, it was important that teachers adapted their approach to teaching and also focused on meeting these students' individual learning needs.

This study provided a tiny snapshot of numeracy learning for students with vision impairment in two regular primary schools in Australia. It presented two case studies and an interpretative picture of contemporary views on numeracy learning. It emphasised that learners with severe vision impairment need to be exposed to creative approaches to numeracy learning, diversified teaching, specialist equipment, materials in appropriate media and extra support to ensure that they are able to learn and apply mathematical skills in a range of situations both familiar and unfamiliar.

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Designing a one-on-one interview tool to capture the transition experiences of young people with vision impairment

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Abstract

This study investigated experiences that facilitate and hinder school-to-post-school transition for young people with vision impairment. Since no tool existed to measure transition experiences of this population, this article details the creation of a relevant interview tool that was later conducted with adolescents with vision impairment. Key questions within this tool could be administered with adolescents across the globe. Adolescents with vision impairment, who currently attend secondary school in south-east Queensland, were invited to record journal entries of their daily lives. After relevant literature was considered, together with adolescent journals, an interview procedure was devised. A small group of expert teachers provided feedback on the interview items. One-on-one interviews were also piloted with two current students with vision impairment.

Key words: adolescents and young adults with vision impairment, transition, school-to-post-school, post-school life, journal writing, diary studies, research interview tool

Introduction

In education, the broadest goal is to prepare students to participate in and contribute to community life (Ziesing-Clark, 2009). Throughout a person's life experiences, transitions from one life stage to another, and from one setting to another, impact greatly on an individual's success in the next environment. Of these, the transition from childhood into adulthood is often regarded as the most critical (Haring & Lovett, 1990; Ziesing-Clark, 2009). Transition from school to life beyond school is a complicated and challenging process for young people and their families. Hence, transition-to-post school has been well researched for people with disabilities in general (e.g., Carter, Lane, Pierson, & Stang, 2008; deFur, 2008; Morningstar et al., 2010; Sitlington & Clark, 2006). Yet, few studies have examined how adolescents with vision impairment are prepared for post-school life, how they transition, and how they take part in post-school life (see Brown, 2009).

As in North America and the United Kingdom, greater numbers of students in Australia with disabilities attend regular schools, as opposed to segregated school settings (Australian Productivity Commission, 2008; Dempsey, 2008). Internationally, the low incidence of vision impairment at the school level is apparent. Students with vision impairment have constituted the smallest cohort of all disability areas. For example, less than 1% of all Queensland school students have a vision impairment (The State of Queensland – Department of Education, 1998). In 2009, a total of 870 students were profiled with a verified impairment in Queensland, including those in early intervention and those attending special schools. Of these, 447 attended state primary (Preparatory – Year 7) or secondary (Years 8 – 12) schools in Queensland. Across the state in that year, a total of 152 students with vision impairment were enrolled in secondary schools with 35 in Year 8, 29 in Year 9, 33 in Year 10, 27 in Year 11, and 28 in Year 12 (Queensland Government – Department of Education, Training and the Arts, 2009). Despite improvement in educational access for children and adolescents with vision impairment, preparation for a successful transition to independent adult life has remained a work in progress.

For young people with vision impairment, the transition to adulthood has been especially complex and challenging (Konarska, 2007; Wong & Dunn, 1998). The low-incidence of this disability may contribute to the modest attention that has been paid to the transition from secondary school to post-school life for these young people. In recent times, some people with vision impairment have experienced significant improvement in their life choices, being active participants in the community and suitably employed (Vaughan & Omvig, 2005). Vaughan and Omvig suggested that the provision of rehabilitation and proper education enables people who are blind to “live full, productive and independent lives” (p. 3). Even so, most still experience great difficulty gaining competitive employment (Kinash, 2006; Nagle, 2001).

Within Australia and New Zealand “there is a lack of programs available for these students as they reach the end of their schooling” (Blatch, Nagel, & Cruickshank, 1998, p. 27). Despite the provision of a disability-specific curriculum, ongoing support from specialist staff, and the design and implementation of individual transition plans, all available research has indicated that many of these young people face social isolation and find the transition to post-school particularly difficult. Research on transition-to-post-school life for young people with vision impairment may assist this population achieve more encouraging outcomes beyond life at school (Sacks, Wolffe, & Tierney, 1998).

Despite the fact that many young people with vision impairment have the cognitive capacity to contribute to and participate in society, research indicates that these young people often experience social and work limitations that diminish their contributions and life satisfaction. Employment has been recognised as an important indicator of life chance

(Wright, 2006). Although efforts are in place to maximise and enrich the transition from school to adult life, individuals with vision impairment continue to experience high levels of underemployment and unemployment in their post-school lives (Crudden & McBroom, 1999; Kirchner & Smith, 2005).

This south-east Queensland study was the first of its kind within Australia to investigate the transition experiences of young people with vision impairment, school staff who worked closely with them, and their parents (Brown, 2013). It aimed to determine the individual perspectives (Mertens, 2005) of adolescents and young adults transitioning from secondary school to the world of work and the social world beyond school. Because preparation can affect the outcomes of interviews (Kvale, 1996) and no tool existed to measure the transition experiences of this population, this article details the preliminary activities carried out by the researcher, field experts, and students to create an interview tool that was later conducted with adolescents with vision impairment in south-east Queensland. Key questions from this interview tool could be conducted with adolescents across Australia, and internationally.

Preliminary research activities

Capturing the "voices" of young people was a critical component of this study because transition literature emphasises the importance of involving students as active contributors in transition planning (Kohler, 1996; Patton, 1999). Within the literature, the voices of students with disabilities have been, for the most part, lacking (Simkiss, Garner, & Dryden, 1998; Wood, 2008). However, a number of empirical studies have highlighted the benefits of listening to student "voices" (e.g., Blossing, 2005; Wood, 2008). Hence, journal writing, expert input from professionals, and feedback from one-on-one interview pilots with adolescents assisted with the development of an interview tool.

Adolescent participants for journal writing

Following ethical approval from the Queensland Government and Griffith University, permission forms were sent to south-east Queensland secondary schools with a vision impairment-coding and dispersed to adolescents with a verified vision impairment who were enrolled in Years 9 to 12. The researcher sought to recruit as many adolescents as possible and accepted the available sample (Punch, 2005) of five adolescents across three different schools. Table 1 shows they ranged from Year 9 through Year 12, from 14 to 18 years of age, and comprised three females and two males. Vision conditions for each adolescent were varied.

Table 1. Demographic Information for Adolescents With Vision Impairment

Student	Name	Gender	Age (years)	Year level	Vision condition
1	Aiden[a]	Male	16	11	Glaucoma & Peters Anomaly
2	Bree[a]	Female	16	11	Retinitis Pigmentosa
3	Cara[a]	Female	14.5	9	Leber's Amaurosis
4	Dan[a]	Male	15	10	Cone-Rod Dystrophy
5	Eve[a]	Female	18.5	12	Retinopathy of Prematurity

[a]Pseudo names used to maintain student confidentiality

Journal writing, commonly referred to as reflective writing (Broadway, Qammar, Evans, & Spickward-Prettyman, 2005; Isikoglu, 2007) was selected because adolescent participants were able to document events, activities, and reflections in their own words (Minichiello, Aroni, & Hays, 2008). The generation of student journals provided several advantages. First, journal writing reduced the bias of retrospection in so far as minimal time passed between an event or experience and its written recording (Bolger, Davis, & Rafaeli, 2003). Second, it provided young individuals with a powerful way to describe their experiences (Clandinin & Connelly, 1994) and, to some extent, facilitated critical thinking, discovery, insight and creativity (Hammond, 2002; Jasper, 2005). Finally, journal writing allowed adolescents to discover personal challenges and successes (Sabo Flores, 2007).

Journal writing procedures

Students were invited to generate journal entries about their lives daily over a 4-week period and to write for around 10 minutes (or one paragraph) each day. Short repeated entries minimised the burden placed on participants and enhanced the likelihood of gaining reliable data. A range of procedures were used to foster and maintain response rate and quality. To ensure frequent journal entries were recorded, students were encouraged to use a preferred media, e.g., braille, audio, handwritten, email, etc. (Bolger et al., 2003). In addition, the researcher visited each adolescent in person to discuss a step-by-step journal writing protocol (Corti, 1993). Five prompts were provided (see Table 2) in a preferred format to give students some direction for their entries to maximise responsiveness (Kaplan, Rupley, Sparks, & Holcomb, 2007; Sabo Flores, 2007).

Table 2. Five Set Prompts to Encourage Student Journal Writing

Number	Prompt
1	What are some good things that happened today?
2	What are some things that annoyed you or bugged you today?
3	Was today like other days for you?
4	How was today different?
5	What would make your day better? What would you like to happen tomorrow?

The researcher also provided school staff with hard copies of information about the student journal writing procedure so that they could informally remind students about their journal writing. Students' parents were also emailed information about student journal writing following in-person visits from the researcher. Consistent with a recommendation by Bolger et al. (2003) to "maintain ongoing contact with participants, in a personal yet nonintrusive manner" (p. 595), the researcher met individually with each student half-way through the journal writing period to discuss their journal entries. At the conclusion of the 4-week writing period, hard copies of student journals were collected in-person to maximise response rates (Corti, 1993).

Outcomes from journal writing

Students produced journals using a range of media (e.g., electronic and handwritten). Some journal entries were written about weekends, while other entries reflected on school days. Data from journal writing provided insight into the lives of adolescents so that relevant content and context could be incorporated into interview procedure. Integrating contextual information into the interview procedure allowed the researcher to pose questions that were meaningful and relevant (Legard, Keegan, & Ward, 2003).

Creation of interview items and the interview procedure

The interview procedure or protocol (Creswell, 2009) included topics to be covered, carefully worded questions in a set sequence (Kvale & Brinkmann, 2009), and a script for the interviewer. Because there was no fixed or pre-defined set of questions (Silverman, 2010), the researcher drafted interview items based on relevant literature and the study's aims. Questions were drafted under three themes that emerged from the literature comprising “school experiences” (likes, dislikes, challenges, vision impairment), “life experiences” (home, family, friends, in the community), and “post-school plans.”

Lead-in questions within the beginning interview questions used content from student journal entries to provide a form of member checking for students and to establish the study’s credibility (Lincoln & Guba, 1985), for example, *In your journal you mentioned studying careers and a lady who is trying to find you work experience. Tell me more about that*. Open-ended interview questions (Gay, Mills, & Airasian, 2009) were generated to prompt students to reflect on their journal writing and encourage them to communicate their perspectives on secondary school, preparation for post-school life, and post-school plans. Because content from student journal entries was incorporated into some interview questions, two protocols were followed to maintain consistency. If a student explicitly discussed a topic or issue from his/her journal, the interview item read, *You wrote . . .* or *In your journal you mentioned …* If a student did not explicitly discuss a topic or issue, the sub-question included, *I can see that …*or *It seems that …* Finally, if students did not discuss a particular issue, the journal-related sub-question read, *In your journal, you didn’t mention …Tell me about …* Aside from individual lead-in questions, all other interview questions were the same for all participants (Patton, 2002).

The researcher was mindful to use a variety of question types throughout the interview to maximise different styles of responses (Kvale, 2007). One question was, *How has school helped prepare you for when you leave school?* Open-ended questions could not be answered in few words (Ivey & Ivey, 2007) and encouraged participant talk that informed the research questions (Minichiello et al., 2008). Towards the end of the interview, a “miracle question" (Davis & Osborn, 2000; O’Connell, 2003) featured. Miracle questions have provided an effective way of engaging (Sharry, Madden, & Darmody, 2003) and challenging interviewees to envisage an improved situation and to detail small steps to reach their “miracle” (Cameron, 2008).

Once the interview questions were drafted, the interviewer’s script was created. The beginning of the script comprised a briefing that included information about the procedure and purpose of the interview, a statement about participants’ anonymity and confidentiality (Kvale, 2007), and a description of the use of the digital recording device (Kvale & Brinkmann, 2009). At this point, interviewees were also asked if they had any questions prior to the interview beginning (Kvale & Brinkmann, 2009). A debriefing was incorporated at the end of the script so that the interviewer could ask participants if there was anything else they had to contribute or any questions to ask prior to finishing the interview. The briefing was a signal for interviewees to “return back to the everyday level” (Legard et al., 2003) and also included a thank you statement that acknowledged the time interviewees spent being interviewed (Creswell, 2009).

Participants for critical expert feedback on interview items

Knowledge produced in interviews is dependent on the wording of questions (Kvale, 2007). Hence, a panel of three professional experts within the field of vision impairment were recruited to provide critical feedback on interview questions. Experts were all female, worked full-time, and held specialist qualifications in vision impairment (one with an additional Masters qualification). They were highly experienced (two secondary school administrators and an additional specialist teacher). They had a minimum of 16 years' experience working with students with vision impairment and at least 10 years teaching experience working in secondary schools with students with vision impairment.

Procedure for providing critical expert feedback

The researcher met the panel at a secondary school that was central, had access to a suitable space, proximity to public transport, and parking availability. The panel was provided with afternoon tea and a booklet comprising a demographic form to be filled out and four pages of draft interview items. The researcher and field experts discussed each question in sequence. Expert staff confirmed that (a) the draft questions covered the scope of the study and that (b) the sub-questions for students included relevant issues for the adolescents (e.g., taxis being late). The panel offered constructive feedback about the nature of questions, ordering of questions, and questions that required greater clarity.

Outcomes from critical expert feedback

The experts pointed out questions they considered too confronting for current adolescents and also offered suggestions about re-ordering questions (e.g., placing more confronting questions towards the end of the interview). Experts also suggested that some of the questions at the end of the interview might be too difficult for students to answer. In addition, they highlighted questions that required clarification. For example, one question included the term “life” and experts recommended that the question specify “life at school”, “life at home”, or both. They proposed more clarity for one question related to information and advice about future options, by adding in another question, *Where did that information come from?* Additionally, experts suggested that, in terms of future planning, it would be best to plan only five years ahead (rather than ten years) because students would experience difficulty thinking about or planning much further ahead into the future.

Participants for piloting the interview procedure

Once refinements were made to the interview items and script, the researcher piloted the interview script and key questions to test different styles of questioning, to examine participant responses to questioning (Silverman, 2010; Teddlie & Tashakkori, 2009), and to increase the measure's reliability (Neuman, 2006). Two students with vision impairment enrolled in secondary schools (Years 9-12) who were not already participants in the study were recruited via written information sheets and accompanying consent forms. Students were provided with a $20 voucher of their choice as an incentive for participating.

Procedure for piloting the interview tool

The main considerations in the formulation of questions were structure, format, content, and sequence (Frankfort-Nachmias & Nachmias, 2008). Therefore, during each interview pilot as each student was interviewed, the researcher made notes on the script and questions related to their readability, their flow/sequence, and participants' need for questions to be repeated or re-worded. Improvements were made after the first interview was piloted, and after the second interview pilot. Following each pilot, participants were asked a series of reflective questions about the interview procedure (see Table 3), and the researcher also reflected on a similar set of questions. The researcher spent a further 10 minutes after each interview reflecting, recalling, and writing down what was learnt from the interview pilot (Kvale, 1996).

Table 3. Reflective Questions Completed by Adolescents Following Interview Pilot

Question number	Question
1	Did you understand each of the questions? If not, which one/s
2	Did you need to ask what any of the questions meant?
3	Did you find any of the questions too hard to answer? If so, which one/s?
4	Any other thoughts/feelings/comments about the questions themselves?
5	Was the interview too short or too long?
6	Any other thoughts/feelings/comments about the interview itself?

The researcher transcribed the first interview pilot verbatim. Kvale (2007) proposed that researchers who transcribe the interviews they conduct "learn much about their own interviewing style; to some extent they will have the social and emotional aspects of the interview situation present or reawakened during transcription, and will already have started the analysis of meaning what was said" (p. 95). Piloting the interview procedure also gave the researcher opportunity to test the *LiveScribe SmartPen* (LiveScribe, 2007-2010). This digital recording device assisted the interviewer to be attentive to an individual interviewee (Patton, 2002). The researcher selected this device for its large recording capacity and ability to provide high quality recordings (Kvale, 2007; Stringer, 2007). Additionally, data files of recordings could easily be transferred to computers for storage and analysis (Kvale, 2007; Minichiello et al., 2008).

Outcomes from piloting the interview procedure

Following the first interview pilot, the researcher examined responses to questions that were minimal and compared the wording of interview questions with that of the transcript. The researcher added text to some questions (e.g., *What are some of the concerns/challenges you have about school?* became *Tell me about some of the concerns/challenges you have about school at the moment?*). The wording of several other questions and the interviewer script were modified so they felt more like a conversation than an interview (e.g., *What are you looking forward to about life after school?* became *After you leave school, you're out in the real world . . . tell me about what you are looking forward to about life after school?*). In addition, the ordering of some questions was changed so that the interview flowed more smoothly. Two questions that proved to be repetitive in terms of participant responses were deleted. A few examples were added to some questions to clarify the meaning of them for interviewees.

After conducting the second interview pilot, few changes were made to the interview questions. Questions about school were made more explicit (e.g., *What would make your life better?* became *What would make your life better at school?*). Following recommendations from Kvale (2007) and Kvale and Brinkmann (2009) to keep questions simple and brief, a few questions were shortened (e.g., *What are your concerns about life after school?* became *What worries you about leaving school?*). The final interview procedure for adolescents with vision impairment (refer to Appendix A) contained nine questions about school life (incorporating journal entries), six questions about life experiences, and seven questions about preparation for life beyond school including the miracle question.

Conclusion

As part of this study, an interview procedure was developed to investigate experiences that facilitate and hinder transition from school to post-school life for adolescents with vision impairment. Three preliminary research activities (adolescent journal writing, gaining expert feedback on interview items, and piloting the interview procedure with adolescents) assisted with the generation of an interview tool which was later conducted with adolescents with vision impairment in south-east Queensland. Gaining feedback from experienced professionals and piloting the interview with current students were critical activities to ensure the tool contained relevant and meaningful content. Key questions from the interview procedure could be administered with other adolescents with vision impairment in Queensland, across Australia, and internationally.

Author note

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Equity and access for students with vision impairment: Where is PNG now and where should it be in 2015?

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Abstract

This paper reports a quantitative research study on equity and access for students with vision impairment (VI) conducted in Papua New Guinea (PNG). Using the WHO definitions, students with VI comprise two groups: those with a low vision with visual acuity <6/18 and those who are legally blind with visual acuity <3/60. A survey questionnaire consisting of 16 questions plus a section for written comments was forwarded to 124 Special Education Resource Centre (SERC) teachers. There was a response rate of 83% (n=103). Respondents rated questions using a five point Likert scale from strongly disagree (1) to strongly agree (5). Preliminary results indicate that the majority of the 366 students who received specialist services in 2009 are braille using and legally blind, with students with low vision seriously neglected. In PNG approximately 160,000 children in any one year level and an incidence of VI of about 0.7% for low vision and 0.15% for legally blind, the numbers would be expected to be about 1,120 for low vision and 240 for blind in each school year cohort if all children went to school. Teachers in the survey identified significant problems as: negative attitudes of parents and regular teachers, an over focus on disability rather than student ability, the need for specialist pre-service and in-service training and a lack of resources to support student transition to secondary and tertiary education. The paper makes three recommendations. These are that the National Department of Education and relevant stakeholders:

1. Make a firm commitment to achieving equity and access for all children including those with VI.
2. Identify all children with VI (low vision and blind) and ensure that they are all assessed and appropriately supported.
3. Provide relevant pre and in-service teacher training and material resources.

Introduction

This research investigates circumstances that inhibit children with VI from receiving an education in PNG. The research aligns with the *World Declaration on Education for All:*

Meeting Basic Learning Needs (UNESCO, 1990), the *Salamanca Statement and Framework for Action on Special Needs Education* (1994) adopted at the UNESCO World Conference on Special Needs Education: Access and Quality and the *Dakar Framework for Action, Education for All: Meeting Our Collective Commitments* (UNESCO, 2000). As a signatory to the *Universal Basic Education* (UBE) conventions PNG has made a commitment to achieve education "For All Children" including children with disabilities by 2015. The PNG National Department of Education (NDoE) (2004, p. 6) identifies its mission as: "to make education accessible to the poor and physically, mentally and socially handicapped as well as to those who are educationally disadvantaged". This commitment was made explicit in the NDoE, (1993) Special Education plan, policies and guidelines and subsequent publications.

Background

Prior to the implementation of the PNG NDoE (1993) plan, policies and guidelines on Special Education, a small number of students with VI attended segregated non-government specialist facilities for their primary and secondary education (Adams, 1986). To attend school and receive an education, students had to leave their community, their language and culture. This often resulted in ongoing displacement even after they left school (Aiwa & Pagliano, 2011).

The UNESCO (1988) *Review of the present situation of special education* estimated that: "less than 2%" (p. 3) of children with disabilities in developing countries receive special services of any kind). In PNG with one report stating: "It was generally accepted that these children would remain at home in the village and be cared for by the community" (PNG National Department of Education, 2002, p.105). PNG NDoE Special Education Office (2009) data indicate that 366 students with VI currently attend school, a figure considerably lower than the estimated eligible number (Aiwa & Pagliano, 2011).

According to the WHO definitions, students with VI comprise those with low vision with a visual acuity of <6/18 and those who are legally blind with a visual acuity of <3/60. With approximately 160,000 children in any one year level and an incidence of VI of about 0.7% for low vision and 0.15% for legally blind if all children attended school the numbers could be as high as 1,120 for low vision and 240 for blind in each school year cohort. Aiwa and Pagliano (2011) argue that this discrepancy is largely because only students who are blind receive services, with children with low vision and children with multiple disabilities are not identified as requiring assistance in the area of vision. They further indicate that the estimate would be substantially reduced if extensive preventive measures, such as basic health care and the prescription of spectacles became more widely available. This is because assessment of VI is of visual acuity after correction.

Method

In this study both quantitative and qualitative survey methods were used to collect, process and analyse the data. A survey consisting of 16 questionnaires and a section for comments were used to assess teachers' feelings, thoughts, and opinions (Shaughnessy et al., 2003) about education of students with VI in PNG. The questionnaire was developed from information obtained from a review of the literature (Aiwa & Pagliano, 2011) and the principal investigator's 26 year experience of working in special education in PNG. Ethics approval for the research was obtained from the James Cook University Human Research Ethics Committee (H3846, 24.8.2010) and the PNG National Department of Education (FRI-1-2, 12.7.2010).

The survey was sent by post to 124 teachers employed in 21 PNG Special Education Resource Centres (SERCs) (see Table 1 for full questionnaire). Participants were invited to rate each statement using a five point Likert scale. Responses were coded in numerical value from one to five (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree). The Likert scale was employed because it is easier to understand, code and interpret (Hanson & Arnetz, 2005).

Results

Of the 124 teachers in SERC in PNG who were sent the questionnaire, 83% (n=103) responded. Simple descriptive analysis, including the number and percentage of respondents, were conducted on the 16 questions (Burns, 2000). These data were then reduced by combining (1 strongly disagree with 2 disagree) and (4 agree with 5 strongly agree). See summary of results in Table 1.

Table 1. Summary of results

Statements	**Strongly Disagree 1**	**Disagree 2**	**Neither agree nor disagree 3**	**Agree 4**	**Strongly agree 5**
1. Children with VI do not attend school because parents and community members think the children are not capable of academic learning.	*Disagree* *20% (n=21)*		*Undecided* *13%* *(n=13)*	***Agree*** ***67% (n=69)***	
2. Cultural attitudes and beliefs about VI negatively affect student progress at school.	*Disagree* *24% (n=25)*		*Undecided* *9%* *(n=9)*	***Agree*** ***67% (n=69)***	
3. Parents of students with VI cannot afford to send their child to school.	***Disagree*** ***51% (n=53)***		*Undecided* *19% (n=19)*	*Agree* *30% (n=31)*	
4. Children with VI do not attend school because of lack of appropriate policies and funding.	*Disagree* *38% (n=39)*		*Undecided* *7%* *(n=7)*	***Agree*** ***55% (n=57)***	

Statements	**Strongly Disagree 1**	**Disagree 2**	**Neither agree nor disagree 3**	**Agree 4**	**Strongly agree 5**
5. Most schools are located in cities and towns but the majority of children with VI live in rural communities.	*Disagree* *26% (n=27)*		*Undecided* *12%* *(n=12)*	***Agree*** ***62% (n=64)***	
6. Students with VI do not progress to further education because of the examination process at grades 8, 10 and 12.	*Disagree* *25% (n=26)*		*Undecided* *16%* *(n=16)*	***Agree*** ***59% (n=61)***	
7. Examination papers for Grades 8, 10 and 12 are provided in braille, large print and audio format for all students with VI.	***Disagree*** ***56% (n=58)***		*Undecided* *10%* *(n=10)*	*Agree* *34% (n=35)*	
8. The NDoE provides specific guidelines on how examinations are to be conducted for students with VI.	***Disagree*** ***61% (n=63)***		*Undecided* *6%* *(n=6)*	*Agree* *33% (n=34)*	
9. Teachers in SERCs are given training in how to produce internal examinations in braille, large print and audio format for students with VI.	***Disagree*** ***52% (n=54)***		*Undecided* *15%* *(n=15)*	*Agree* *33% (n=34)*	
10. Teachers emphasise the disability rather than the student with VI's ability	*Disagree* *18% (n=22)*		*Undecided* *11%* *(n=11)*	***Agree*** ***71% (n=70)***	
11. Mainstream schools receive SERC support for students with VI.	*Disagree* *22% (n=22)*		*Undecided* *18%* *(n=19)*	***Agree*** ***60% (n=62)***	
12. All teachers in primary and secondary schools are trained in the education of students with special needs.	***Disagree*** ***73% (n=75)***		*Undecided* *8%* *(n=8)*	*Agree* *19% (n=20)*	
13. All school administrators are familiar with NODE policy on inclusive education.	***Disagree*** ***70% (n=72)***		*Undecided* *10%* *(n=10)*	*Agree* *20% (n=21)*	
14. Students with VI make little progress to tertiary institutions because of negative attitudes displayed by teachers and school administrators	*Disagree* *14% (n=14)*		*Undecided* *11%* *(n=11)*	***Agree*** ***75% (n=78)***	
15. All needs of students with VI are adequately addressed by regular and SERC teachers.	***Disagree*** ***68% (n=70)***		*Undecided* *4%* *(n=4)*	*Agree* *28% (n=29)*	
16. Students with VI should attend a Special Education Resource Centre rather than a mainstream school.	***Disagree*** ***56% (n=58)***		*Undecided* *11%* *(n=11)*	*Agree* *33% (n=34)*	

Questions one to five focused on what teachers identify as the reasons why children with VI do not attend school. Sixty seven per cent of respondents indicated that the two strongest reasons for children not attending school were that parents and people in the community do not believe the children are capable of academic learning, and that negative cultural attitudes and beliefs about VI deter participation. The third reason identified, was the distance children have to travel to attend school (62%) and the fourth reason with 55% agreement was the lack of appropriate policies and funding. The majority of teachers did not consider parental socioeconomic status as an inhibiting factor with 51% disagreeing or strongly disagreeing, and only 30% agreeing or strongly agreeing.

In PNG, students must pass national examinations at grades 8, 10 and 12 to progress to further education. Questions six to nine were included to determine whether or not teachers considered that adequate arrangements were being made for students with VI. The strongest negative response (61% disagreeing or strongly disagreeing) indicated that the NDoE did not provide specific guidelines on how examinations are to be conducted for students with VI. Further, the survey responses indicated that 59% of respondents agreed that the national examinations did inhibit student with VI progressing to higher levels in education. Only 34% of teachers agreed or strongly agreed that examination papers were provided in appropriate formats such as braille, large print or audio and only 33% of teachers agreed or strongly agreed that they were given training in how to produce examinations in alternative formats.

A series of survey questions (10 to 16) focused on what happens while students with VI are at school. In this section the teachers gave their five strongest responses for any of the 16 questions. The majority of teachers (75% agreed or strongly agreed, believe negative attitudes of teachers and administrators inhibit student progress to tertiary education. Seventy three per cent of respondents disagreed or strongly disagreed that education of students with special need featured in primary and secondary teachers training. Further, 71% agreed or strongly agreed that teachers emphasise the disability rather than student ability when considering students' progress. Additionally, the survey respondents noted that school administrators lacked familiarity with NDoE policy on inclusive education (70%). This lack of awareness was consistent with the survey finding that 68% of respondents believed that student needs are adequately addressed by regular and SERC teachers. The remaining question focussed on the ability of mainstream school teachers to support students with VI with 65% disagreeing or strongly disagreeing students with VI should attend SERCs rather than mainstream schools with only 33% agreeing or strongly agreeing.

Discussion

The most prominent result (75%) relates to the prevalence of perceived negative community attitudes, with parents, with teachers and with school administrators. Negative attitudes strongly influence expectations regarding student achievement. They begin with parents and community members not believing that children with VI are capable of achieving at school and are reinforced by pervasive negative cultural attitudes and beliefs. Teachers summed up the problem of negative attitudes by saying "most people see blind people as valueless”. “More children with VI are held back at homes/villages because parents and children themselves do not know their rights”. Most research studies supported the idea that higher levels of personal contact improve attitudes towards disability group (Gouvier, Steiner, Jackson, Schlater, & Rain, 1991; Hunt & Hunt, 2000; Meyer, Gouvier, & Advokat, 2001; Strohmer, Grand, & Purcell, 1984). One teacher describes attitudes “of able people towards VI (which) do not allow them to have basic education”. Similarly, parent’s cultural beliefs and attitudes about VI negatively affect student progress at school. Attitudes have always been a point of discussing and debate by professionals because of the assertion that attitudes direct behaviour (Azjen & Fishbein, 1980; Goddard & Jordan, 1998; Livneh, 1991; Millington, Strohmer, Reid, & Spengler, 1996; Yuker, 1988).).

As one teacher puts it “cultural belief hinders the student with VI access to basic education”. Another expressed similar sentiment that “classification tags of students with VI’s must be removed”. Hence, Blatch, Nagel and Cruickbank (1998) share their experiences in New Zealand, that diverse cultural needs of students with vision impairment will continue to be an issue. According to Frost (2002) it is vital to understand the difference between PNG traditional and western beliefs about why some children are born with disabilities could assist teachers, parents, and communities in their work with children with special need. Furthermore, Evriss (1990) stressed that the attitudes of staff, parents, pupils and school community as well as ethos of the school will greatly impact on the educational services provided for students with VI.

This is because only those children who are functionally blind are identified and receive support (Aiwa & Pagliano, 2011). Children with low vision either attend school without being identified or do not go to school. Low vision is regarded as an invisible disability because it is not immediately apparent. As one teacher reported: “children [with VI] attending schools are not given [as] much attention as … children with other forms of disabilities.” Another respondent went further to claim: “in PNG VI is the most neglected area”. Thies, Keeffe and Clarke (1998) pointed out that with the reduced extent of their visual field many students with low vision were unable to read regular print. Therefore, students with low vision often experience significant problems with learning because of the limited amount of vision they have available for them to see both near and distant objects. The implication of vision loss in learning is a major obstacle compared to sighted students. Because of the importance of vision in perceiving information, the loss of vision results in educational, social, and environmental experiences that are different from sighted peers (Groenveld, 1990; Rex et al., 1994).

The 16 questions in the survey covered possible reasons why children do not get to school, do not stay at school, and/or do not make progress while at school. Teacher training and resourcing were two issues of considerable concern with some respondents arguing these measures are necessary to implement the policy. Teachers stressed that regular teachers in primary and secondary schools require more training in special needs, and SERC teachers require training in areas other than primary. As one teacher described “teachers at all levels … should be trained to teach [children with] special needs”. Spungin and Ferrell (1992) share similar views that the students with VI are entitled to a teacher who is competent to provide specialist services for students with VI. Yet, another teacher stated that “SERC staff cannot support effectively students with VI at [higher levels] … because SERC staff are all primary … trained”. Chapman and Stone (1988) emphasised that all teachers working with students with VI should have specialist training. “Inclusive education policy is there but teachers are not implementing purposively due to lack of knowledge and skills”.

Special Education Resource Centre (SERC) teachers’ comments about resources emphasised the need for both material resources such as specialist technology, braille, low vision aids and large print materials as well as human resources such as staff who know braille, Orientation and Mobility Instructors and much greater access to Optometrists and Ophthalmologists, especially in rural areas (Murphy, 2011). As one respondent stated “all SERCs should be equipped with appropriate specialised equipment to produce materials to assist children with VI in their learning”. Yet, another made similar comment “PNG has adopted and also came up with a very good policy on special education, but lack of funding and resourcing is hindering effective implementation of the policies. I hope the government increases its funding allocation to the National Special Unit and Resource Centres to promote a wider inclusion in mainstream schools”. Gale and Cronin (1998) have proposed that the inclusion of students with VI in a class depends on forward planning. Blatch, Nagel and Cruicksbank (1998) expressed that many students would require text and materials in alternative format which takes time to prepare. The students with VI should have access to the curriculum in the format that is appropriate, at the same time with sighted students. Therefore, the resources and support for students with VI should be shared amongst different organizations and individuals supporting the learning of students with VI. In Blatch (1997) words “innovative planning and sharing of resources between agencies can help in this process”.

Conclusion

Teachers in the survey identified significant problems as: (a) negative attitudes of parents and regular teachers, (b) an over focus on disability rather than student ability, (c) the need for specialist pre-service and in-service training and (d) a lack of resources to support student transition to secondary and tertiary education. The paper makes three recommendations. These are that the National Department of Education and relevant stakeholders:

1. Make a firm commitment to achieve equity and access for all children including those with VI. (This would require extensive work on reducing negative attitudes).
2. Identify all children with VI (low vision and blind) and ensure that they are all assessed and appropriately supported.
3. Provide relevant pre- and in-service training and material resources.

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On the Shoulders of Others

Tim Connell

Quantum: Reading, Learning, Vision

Much has been written on what it takes to educate a child who is blind or has low vision. We have outstanding people in research and policy development. We have extraordinary teachers and educators whose experience and day-to-day knowhow is matched only by their commitment and compassion. Students have resources and access to information at a level that previous generations would have found difficult to even imagine. I have had the pleasure of working in this field for nearly 30 years and if I was asked to summarise that experience in a single word, it would have to be PROGRESS.

However, there are still significant problems, and often as a result of the revolving door of politics, programs and preferences change and we take some steps backwards before we move forward again. We are seeing moves towards generic models of disability support under which skills and expertise, particularly in braille and deafblind services are threatened. There remain large discrepancies between the level of service and resources available to students depending on where they live. And we haven't seen huge improvements in life after school, with unemployment still near the 60% level.

If I was asked to name the single biggest backward step we have made here in Australia it would have to be the loss of Schools for the Blind. This may upset some people, however, I believe the pendulum has swung too far in the direction of full integration at the expense of specialist services. Blind and low vision students need a whole raft of specialist skills and experiences that take dedicated and systematic instruction, and that is best done with peers in a setting that accommodates their differences. I stress, however, that they need that time in a specialist setting <u>in addition</u> to the experience of being integrated into a regular school. We need both integration and specialist Schools for the Blind, and I applaud Alan Lachman and Kay Berry-Smith for the fantastic work they are doing at the Insight Education Centre for the Blind and Vision Impaired in Victoria.

I have visited Schools for the Blind in 24 countries and I believe there are a number of things they have in common, independent of funding or whether they are in the so-called developed or developing worlds. They can offer students advantages in addition to academic pursuits, including sport and physical activity, the normalisation of difference (because everyone is in the same boat), and the security of knowing that your peers really do understand you. And possibly the biggest advantage is a prevalence of higher expectations. A student in a specialist setting tends to be judged on his/her abilities and interests more than on their disability, whereas in an integrated setting, blindness and loss of vision are foreign and unimaginable and provide a backdrop for the lowering of expectations.

The very concept of expectations can be hard to define. Expectations are always relative to the environment and the experiences of the people in the life of the student. However, in a specialist setting there is a greater familiarity with, and understanding of blindness and vision loss, and therefore a greater focus on intrinsic skills and aptitudes. Schools for the Blind also offer many more opportunities for exposure to, and interaction with role models; a key determinant of the expectations that students develop for themselves.

There is a sense in which the loss of Schools for the Blind can also be viewed as the loss of a community. A School for the Blind naturally becomes the focus of many people in addition to the students; the teaching and support staff, the parents, and the local groups and volunteer organisations that support them. That wider school community includes former students and other role models who are willing to donate their time to demonstrate to students' first-hand what vision loss has meant in their lives.

In Australia we seem to have lost many opportunities for role models to interact with and be an inspiration to children, their teachers and parents. There are notable exceptions to this such as Music camp, Space camp and the end of year camps available in some states (all made possible by the dedication of volunteers), but I meet many blind children that have never met a successful blind adult.

So the following is my small attempt at contributing to those lost communities by describing a few of the many important, talented and inspiring role models that I have had the privilege of meeting. This list is in no way intended to be exhaustive and I have focussed on just a few people from overseas who may not be as well known here.

Dr Tim Cramner. Dr Cramner was born in humble circumstances in Kentucky and has been dubbed the most important blind inventor since Louis Braille. He developed the Cramner Abacus, new methods for creating tactile graphics, one of the first speech synthesisers, and the first prototypes of a handheld notetaker called the Braille-n-Speak that revolutionised notetaking for blind people around the world. He also played a part in the development of our Jot-a-Dot. He was the mentor of Dean Blazie who created Blazie Engineering that eventually became Freedom Scientific.

Dr Kenneth Jernigan. Dr Jernigan also came from humble circumstances in the Tennessee hills, but rose to become the leader of the National Federation of the Blind, an inspirational speaker and writer, and arguably the single most influential person in changing society's attitudes towards blindness. Often controversial, he was a major contributor to the philosophical framework of independence that underpins much of disability theory today.

Dr Larry Scadden. Dr Scadden lost his sight as a child due to illness. He holds a master's degree in Psychology and a Ph.D. in Visual Sciences and has influenced Federal US policy and design in the field of technology and disability. From 1992 to 2001, he worked for the US National Science Foundation to design and establish the Program for Persons with Disabilities and was program director of NSF's Bioengineering and Research to Aid Persons with Disabilities.

Dr Sally Mangold. Sally taught blind and vision impaired students for 16 years, and was vision impaired herself. She then trained VI teachers at San Francisco State University for 18 years. Her dozens of books, articles and videos help teachers, parents and those who want to lend a helping hand. She is best known for the "Mangold Developmental Program of Tactual Perception and Letter Recognition". The teacher's manual has been translated into seven languages and is used around the world.

Dr Kent Cullers. Kent Cullers had ROP as a baby. He became the first totally blind physicist in 1980 when he received his Ph.D. from the University of California. Upon graduation he worked for NASA and worked his way through a variety of roles culminating in the position of Director of the SETI (Search for Extra Terrestial Intellgence) project. He developed, evaluated, and implemented optimized detection algorithms that interpret signals originating from distant Earth-like planets.

Ted Henter. Ted lost his sight in a car accident in his twenties. He formed a company with Bill Joyce, called Henter-Joyce, that went on to produce the JAWS screen reader and was also one of the companies from which Freedom Scientific was formed. He continues to champion technology development especially access to the teaching of mathematics and science.

Jerry Kuns. Jerry was born with low vision and lost all of his vision as a youth. He has held a number of positions within government and industry and is currently a technology trainer at the California School for the Blind. Jerry has devoted a great deal of his life to being a role model for students and regularly talks to students and their parents. He has inspired literally thousands of students with the stories of his life and adventures, and his attitude that there is nothing that can stop him. In his spare time he runs “Blind Guided Walking Tours” of San Francisco, where he leads groups of sighted and blind tourists around the streets of San Francisco. Recently he was the driver of a car in an episode of MythBusters.

These are all high profile and extraordinary role models. Equally there are so many other role models that are not high profile, that get an education, work, raise a family and live regular successful lives, but who happen to be blind. They all share a common achievement; going beyond what was expected of them.

A lack of expectations is at the heart of the continuing struggle that many blind people find themselves in. It can start in the home, be re-enforced in school and be carried on throughout life. It is grounded in our ideas of “difference”. With blindness, this concept of “difference” is more pronounced because it is derived from a perception of loss, the loss of sight; a gift that most people see as a defining ability of being human. Because blind people have lost something so precious, they are (logically) to be pitied. And unless this attitude is directly challenged students who are blind or vision impaired can all too easily assume the negative identity perceived by others.

If a person is defined first and foremost as being blind it casts a shadow over anything else they may be, or achieve. Ray Charles may have been one of our greatest jazz pianists but how did he know what clothes to wear each day? No matter what a blind person may achieve, the general population doesn’t understand how the “differences” of being blind can be overcome. Sighted people assume that blind people simply can’t do all the things they can, and hence they don’t expect them to. They lower their expectations because of ignorance.

To help overcome this I call on all vision teachers, parents and the organisations representing them to ensure that blind and vision impaired students regularly meet and interact with successful blind adults. This interaction needs to be an on-going part of their education, not a one-off event. Good role modelling can help minimise the effects of the negative and destructive attitudes and stereotypes that they will encounter, and help foster positive self-esteem and high expectations for their future.

We need to give the next generation of blind and vision impaired students the opportunity of standing on the shoulders of those who have gone before. It is from that vantage point they can best see the future.

Vision Impairment, its effect on social skills and social behaviour: What parents say

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Abstract

Children require well developed social skills in order to build relationships, develop positive self-esteem, and gain acceptance into society (Wolffe, Sacks & Thomas, 2000). This article describes the perceptions of parents regarding their children with vision impairments' social skills and social behaviour. Parents of a group of sighted children also completed the survey and the findings were compared. The results revealed that some children with vision impairment did not interact with peers, as frequently as their sighted classmates. Many were reported to cooperate with peers, but not as frequently as the students with no vision loss. In addition support for peers was inconsistent and there was a tendency for some children with vision impairment to disrupt groups. Parents also reported that their children were less likely to make eye contact, but as likely to use body language, gesture and facial expression. Finally there was little evidence of aggressive behaviour, fighting and bragging, but some evidence of short temper and hurt feelings.

Keywords: Vision impairment, learners, parents, social skills, social behaviour

Introduction

Learning and using appropriate social skills, according to McCuspie (2006) is critical for students with vision impairment who are included in their local school. Sacks and Barclay (2006, p.279) add that "the acquisition and maintenance of a repertoire of social skills is the foundation upon which personal relationships are built". These authors also report that children who have good social skills, who can interact with peers and who can demonstrate appropriate social behaviour are more likely to gain entry into groups of peers. Celeste (2006, p. 521) found that "even in 'high- quality' environments, with supportive professionals present, children must possess a repertoire of social skills to gain entry into existing dyads and triads and to sustain interactions, so as to be socially independent".

Sacks and Silberman (2000) claim that children with vision impairment have unique social needs, which must be recognised and addressed. Vision plays an important role in the acquisition and refinement of skills that form the basis for positive social interactions

(Kekelis, 1992). Possibly of all the processes of development, socialisation is the one that is most strongly affected by vision (Sacks & Silberman, 2000). Vision impairment impacts on the way children perceive their environment, interpret social situations, learn appropriate social behaviour, initiate and respond to interactions with peers and develop self concept. It also affects how others interact with them.

George and Duquette (2006, p. 152) assert that research in a number of Western countries revealed that many students with vision impairment are “lonely and isolated from their sighted peers ... They have fewer friends, fewer opportunities to socialize, and fewer occasions to develop their interpersonal skills.” McGaha and Farran (2001) hypothesise that vision impairment impacts on the patterns of social interaction of preschool children with vision impairment. From their study, they found that children initiate interactions less frequently and less successfully than their sighted peers, they tend to parallel play, particularly indoors, and when they do initiate interactions with others, they have difficulty sustaining them.

D’Allura (2002), in her study of preschool children examined the effects of reverse integration and cooperative learning strategies on their social interaction patterns. She determined that children with vision impairment are as likely to be selected as targets of interaction by other children as their sighted peers. She also determined that like sighted children, those with vision impairment enjoy playing, interacting with classmates and exploring the environment. She emphasised that the type of environment in which the children interact affects not only whether or not they relate to their environment, but also how they relate to it.

Interaction with peers enables children to develop and refine interpersonal skills (Sacks et al., 1992). Social competence is dependent on visual cues, which are frequently expressed through non-verbal messages and gesture, and children with vision impairment have difficulty in mastering these skills, which are learned through observation and imitation (Sacks & Silberman, 2000). Facial and body movements are extremely important in communicating messages and establishing understanding and control of children’s social environment (Skellenger, Hill & Hill, 1992). Eye contact is important for indicating interest, and gaze direction assists in group interaction, gestures add to verbal dialogue, and facial expressions indicate interest and incite responses (Kekelis, 1992). Skellenger et al. (1992) explain the importance of nonverbal, visually-mediated behaviours such as eye contact, shared gaze, pointing and facial expression. They point out that these behaviours not only carry immediate communicative messages to peers but also establish children’s understanding and control of their environment. Children with vision impairment generally fail to use non-verbal behaviour that mediates, initiates and maintains social interactions. In addition, research by Kim (2003) observes that aggressive behaviour relates to peer rejection, and withdrawn behaviour relates to peer neglect. She perceives that children who "play alone, display off-task behaviours, and demonstrate the greatest hovering behaviours (acting shy, anxious, and fearful) and are the ones most often neglected by peers" (p. 2). This paper presents the findings of a study that investigated parents' perceptions of their children's social skills and social behaviour. It focuses on the social and emotional aspects of social behaviour and the skills that facilitate social interaction and social acceptance.

Aim of the Study

This study aimed at investigating parents' perceptions of the social skills of their child with vision impairment. Inquiry into the relationship between vision, social information processing and patterns of social behaviour suggests that each influences, or has an impact on, the other. Children who interact aggressively, display moody, domineering behaviour, or who are not giving appropriate social signals, are likely to be rejected by peers (Kim, 2003). Students with vision impairment have a significant challenge in learning these social skills and, as a result, face rejection in the regular school setting. For this reason, it is important to investigate the social skills and social behaviour of young people with vision impairment.

Research Questions

The research questions that emerged from the aim of the study are as follows:

1. What are parents' perceptions of their children's social behaviour?
2. Do parents believe their children use social skills such as eye contact, body language, gesture, and facial expression competently?
3. How do parents perceive their children's social behaviour such as aggressive behaviour, teasing and fighting, and emotional aspects of behaviour relating to temper, feelings, independence and bragging.

Method

The present study adopts neither a completely qualitative approach nor a completely quantitative approach but a blending of the two. The incorporation of a range of approaches was considered appropriate to illuminate, interpret, and acquire a deeper understanding of the phenomena under investigation. Because of the low numbers of participants available, findings must be interpreted with caution as they may not be transferable to other populations or contexts. Data were collected from parents by way of structured interviews and a survey. Parents completed the survey in which 12 of the 20 items focused on their children's social skills. The interviews elicited data on the parents' perceptions of their children's social skills and how they interacted with their friends.

Participants

Twelve students with vision impairment and their parent(s) participated in the study. They were selected on the basis of age, grade level, school location, and vision status. The nature of the students' condition was established from medical reports from their ophthalmologist. Parents had signed a consent form to allow this access. The group of students with vision impairment consisted of six females and six males. Seven students had albinism and the other five had significant vision impairments. To help interpret the findings, parents of children with no vision problems were also asked to participate and nine agreed (8 males and 1 female). Student participants were matched as closely as possible for age: 8-10 year olds (6:5); 11-12 year olds (4:2) and 13-14 year olds (2:2)

The profile of the participants is presented in Table 1. Males and females with vision impairment were matched for gender (6:6).

Table 1. Profile of the participants in terms of gender, age, eye condition, and date of birth

Gender	Age	Eye Condition
M	9	Oculocutaneous Albinism Tyrosinase negative (OCA-)
F	11	Oculocutaneous Albinism Tyrosinase negative (OCA-)
F	11	Oculocutaneous Albinism Tyrosinase negative (OCA-)
M	14	Oculocutaneous Albinism Tyrosinase positive (OCA+)
M	9	Oculocutaneous Albinism Tyrosinase positive (OCA+)
M	11	Ocular Albinism (OA)
F	8	Ocular Albinism (OA)
F	10	Microcephaly progressive degenerative retinal dystrophy
F	12	Coloboma
M	9	Retinitis Pigmentosa
F	8	Encephalitis, vision impairment
M	13	Congenital nystagmus
M	10	No vision loss
M	12	No vision loss
M	9	No vision loss
M	8	No vision loss
M	13	No vision loss
M	10	No vision loss
M	13	No vision loss
F	12	No vision loss
M	9	No vision loss

Limitations

This study is limited by the size and nature of the group of students under investigation and the number of parents who completed the questionnaire. It is a snapshot of a group of students living in the metropolitan area of a city in Australia, which provided few subjects. The sensitivity of the area and the unwillingness of some parents to participate in the study, further limited access to subjects. Because of the low numbers of students available for the study, findings must be interpreted with care as they cannot be transferred to other populations or contexts. The age of the group of students with vision impairment was limited to those between the ages of 8 and 16. This was because the nature of the instruments used in the study were not appropriate for students younger than eight, and students over the age of 16 were either engaged in their final years of study, or were likely to leave school during the collection of data.

Findings: Parents' perceptions

Parents of young people with vision impairment were asked to rate their perception of how their children interact when at play, cooperate with others, support peers, disrupt groups, and lead, mix with, or are rejected by peers. The survey also required them to report on aspects of social behaviour such as aggressive behaviour, teasing and fighting, and emotional aspects of behaviour relating to temper, feelings and independence. The survey was composed of a set of Likert Scales, which asked participants to rate each item on a scale that ranged from zero to five; zero representing "not at all" and five representing "to a high degree". The interviews added to the richness of the data and investigated parents' views on whether their children use social skills such as eye contact, body language, gesture and facial expression as they perceived these behaviours at home with siblings and local friends.

Students interact when at play

A small majority of the students with vision impairment in this study (8 of the 12 or 67%) interacted frequently, or to a high degree when at play, according to their parents, three did so sometimes, and one occasionally. The data provided by parents showed that in the case of those interviewed the students with vision impairment were not as likely to interact frequently or at a high level as their sighted peers. This information is displayed in Figure 1, which shows that seven of the nine students with no vision loss (77%) interacted in a group to a high degree when at play and the other two did so sometimes.

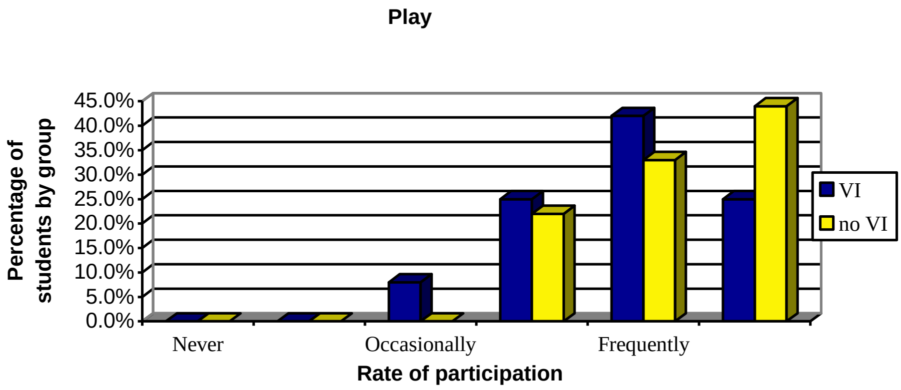

Figure 1. Reports from the parent survey on the rate at which students with vision impairment and sighted students interact in a group when at play (N=21).

Students Cooperate with Peers

Figure 2 shows the degree to which students with vision impairment cooperated with others, according to their parents. Three students with vision impairment (25%) were reported as cooperating to a high degree, three (25%) frequently, five (42%) sometimes, and one (8%) occasionally. Overall, students with vision impairment cooperated with peers, less consistently that the sighted students of whom four (44%) cooperated to a high degree, four (44%) frequently and one (11%) sometimes.

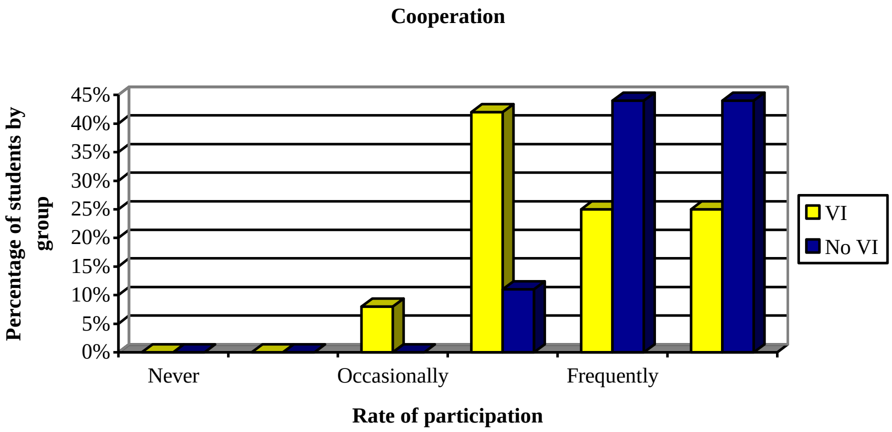

Figure 2. Reports from the parent survey on the rate at which students with vision impairment and sighted students cooperate with peers (N=21).

Students disrupt the group

Of the participants with vision impairment, two students (17%) disrupted groups frequently, three (25%) sometimes, three (25%) occasionally two (17%) rarely and two (17%) never. While eight (67 %) of students with vision impairment disrupted groups at least occasionally, only four (44%) of students with no vision loss, disrupted groups at least occasionally, and the other five (55%) never. These data are shown graphically in Figure 3.

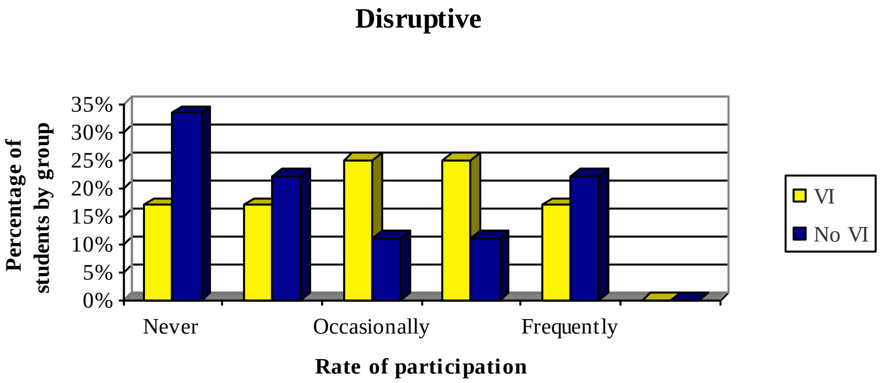

Figure 3. Reports from the parent survey on the rate at which students with vision impairment and sighted students disrupt groups when interacting with peers (N=21).

Students support peers

Parents reported that seven (58%) of the 12 students with vision impairment supported peers either frequently or to a high degree. Figure 4 shows two students (17%) with vision impairment supported peers to a high degree, five (42%) supported them frequently, three (25%) sometimes, and two (17%) occasionally. As can be seen from Figure 4, students with no vision impairment were more inclined to support peers than those with vision impairment. Six students with no vision problems (67%) supported peers to a high degree, two (22%) did so frequently, and one (11%) sometimes.

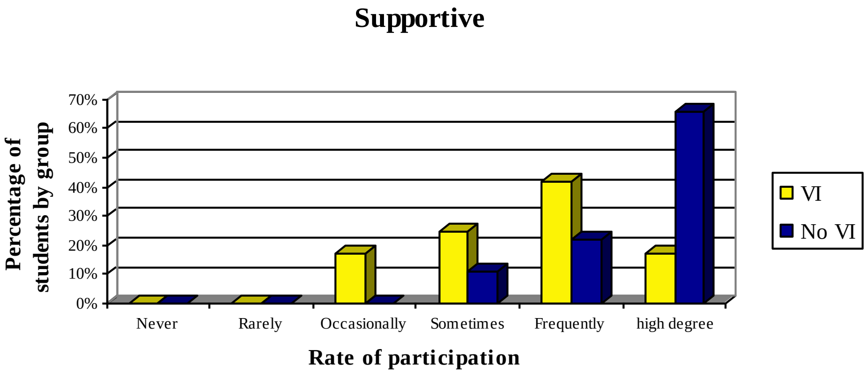

Figure 4. Reports from the parent survey on the rate at which students with vision impairment and sighted students support their peers (N=21).

Students mix with peers

Four students with vision impairment (33%) mixed with peers to a high degree, two mixed frequently (17%), and six sometimes (50%). The findings are represented in Figure 5. When these findings were examined in the light of those of their sighted peers, it was clear that the participants with vision impairment did not mix as consistently as the students with no vision loss, 77% of whom mixed with peers to a high degree or frequently.

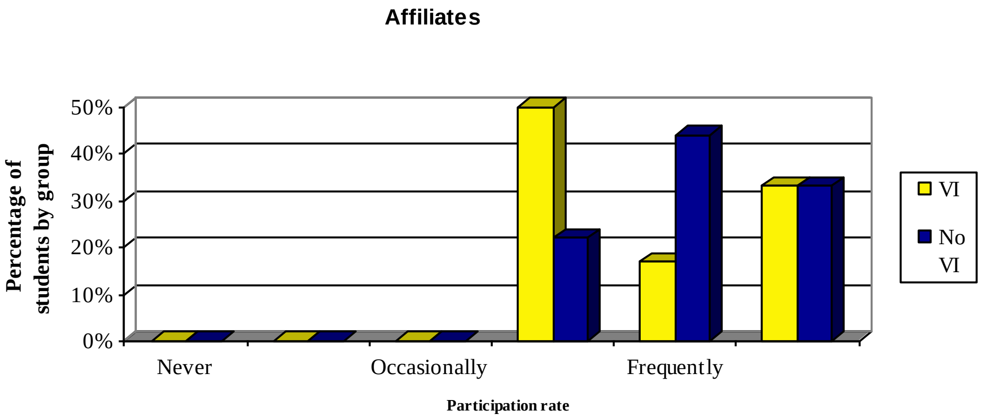

Figure 5. Reports from the parent survey on the rate at which students with vision impairment and sighted students mix with peers (N=21).

Students lead peers

Parents were asked to rate the degree to which their children lead peers. Figure 6 shows that the majority of children with vision impairment led others. Two students (17%) with vision impairment led others to a high degree, one (8%) did so frequently and six (50%) sometimes and three rarely or never. However, when these findings are compared to those of students with no vision problems, it can be clearly seen that students with no vision problems (44%) tended to lead peers more frequently than students with vision impairment (25%). Only one sighted student was reported to never lead others.

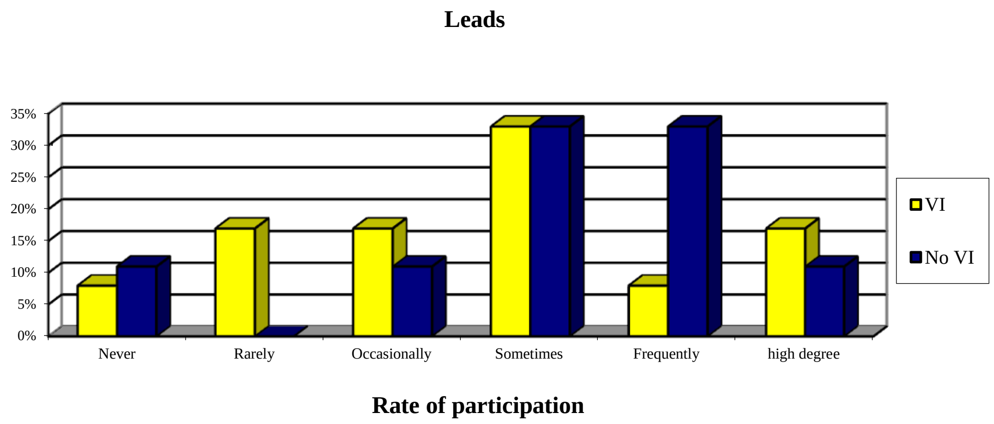

Figure 6. Reports from the parent survey on the rate at which students with vision impairment and sighted students with lead peers (N=21).

In summary, children with vision impairment, according to their parents, were not as likely to interact when at play at a frequent or high level as their sighted peers. Although they were reported to cooperate with their peers, on the whole this behaviour did not occur quite as consistently as that of the sighted group. They were more inclined to disrupt groups than their sighted peers and they did not support classmates to the same degree as children with no vision loss. While the evidence showed they did, however, mix with their peers they did not do this as consistently as sighted children. Students with vision impairment led peers but not as frequently as parents reported that sighted children did.

Body language and social behaviour

Parents were asked to comment on how competently their children with vision impairment used body language such as eye contact, body language, gesture, and facial expression. In addition they were asked whether their children shared, took turns, and accepted the opinions of others.

Eye contact

Twelve parents of young people with vision impairment responded to the question on eye contact. They reported that only two of the twelve students with albinism made eye contact consistently, and one did so most of the time. Of the remaining nine students, one made eye contact if reminded, one did so sometimes, another was learning, and the last six did not make eye contact. One parent of a child with albinism who said she made eye contact if reminded commented on the difficulty her daughter had:

> *She does if I tell her but still her eye … I think it's to do with her vision, she keeps her head down, she looks around. The other day the teacher was talking to her and I said, "well! Look! look at the teacher in the face" and she said, "I can't because it's glary. I think that makes a lot of problems too, the glare, like she squints a lot, she does a funny frown look on her fact and I realise it's when she's talking to someone there could be a bit of glare and that's what's doing it.*

The mother of a boy with vision impairment also noted problems her son had, which could give others the wrong impression and so interfere with his social acceptance:

> *Yes, he has a slightly wandering left eye. He is looking at you but he is not looking. I think he does [make eye contact], but others would interpret it as – get the feeling that he was not focused on them.*

From the parents' perspective, their children with vision impairment were less likely to make eye contact than their sighted peers. Four of the twelve parents of children with vision impairment claimed that their children made eye contact consistently, most of the time or at least if reminded, and six of the nine parents of the sighted group believed that their children usually exhibited this behaviour. Six parents of students with vision impairment were quite definite that their children did not make eye contact. They made comments like, "No he can't", "No, eyes wander"; "No, not even with the family"; "no, closes eyes". Of the three parents of sighted students who said their children did not make eye contact, one explained that her son was shy and the other indicated that eye contact was made "more fleetingly". The third parent made no further comment.

Body Language

Eleven parents of students with vision impairment claimed their children used body language. By comparison the parents of the sighted students (seven of the nine who participated in the study) believed their children used body language.

Gesture

Only seven parents of children with vision impairment and one with a child with no vision problems responded to the question on gesture. The majority believed their children with vision impairment used gesture as did the parent of the sighted child.

Facial expression

Ten parents of children with vision impairment expressed the belief that their children used facial expression; one said this occurred infrequently and the other was unsure. All but one parent of the sighted group claimed that their children used facial expression.

In summary, the majority of students with vision impairment used social skills such as, body language, gesture and facial expression, according to their parents, however, they were less likely to use eye contact. These findings, with the exception of eye contact, were similar to those from parents of children with no vision problems with the exception of gesture which was not addressed by eight of these nine parents. Parents' views as to whether their children use eye contact, body language, gesture and facial expression can be found in Table 2.

Table 2. The responses of parents of the regarding whether or not their children use social skills such as eye contact, body language, gesture and facial expression

Name (Pseudo names)	Eye Contact	Body Language	Gesture	Facial Expression	Comment
VI					
Sam	Sometimes	Yes	Yes	Yes	
Trish	No	Yes	Yes	Yes	
Jan	Yes if I tell her to	Yes	Yes	Yes	
Tim	Yes	Yes If angry you can tell	Yes, uses both hands when talking	Yes. When angry you can read it on his face without much trouble.	Wandering left eye. looking at you but he is not looking. Others would get the feeling that he was not focused on them
John	No he can't	Yes	Yes, uses hands a lot	Normal animation	Quite expressive but more with his hands
Sara	Yes most of the time	Yes		Yes	
Tom	Learning	Yes		Yes	Mother trying to get him to make eye contact
Judy	Yes	Yes,	Yes	Yes	Body language especially when talking
Tessa	No, going Eyes wander	Yes	No	Yes	Certainly can tell from her body language what she feels and what her moods are.
Ian	No, not even with family	Yes very much so		Not a lot	Eye contact: even with family no.
Alice	No, closes eyes	Not a lot		Don't know. Think she does	When saying something meaningful closes eyes to cut out all distraction
Travis	Adults no	Yes		Yes	Eye contact, not with adults unless comfortable. If so the life of the party

Name (Pseudo names)	Eye Contact	Body Language	Gesture	Facial Expression	Comment
No VI					
Jesse	Yes if not in trouble	Yes		Yes	
Ben	No Shy	No		Yes totally	
Mat	More fleetingly	Yes		Yes	Something that's improving. Depends on his comfort level. With friends no problem. Inadequate with adults
Luke	Yes	Yes		Yes	
Dennis	Yes	Yes a lot		Yes very much	
Gill	Yes	Yes		Yes, very much so	
Mark	Yes	Yes	Yes	Yes	
Jay	No	No		No	
Ray	Yes	Yes		Yes	

Social Behaviour

The survey also required parents to report on aspects of social behaviour such as aggressive behaviour, teasing and fighting, and emotional aspects of behaviour relating to temper, feelings and independence. The following findings emerged from this data.

Aggressive behaviour

Parents reported that four children with vision impairment never or rarely engaged in aggressive behaviour, five did so occasionally or sometimes and two frequently. By comparison the parents of the sighted group claimed that four children never or rarely behaved aggressively, three did so occasionally or sometimes, one frequently and one exhibited this behaviour to a high degree. Figure 7 shows these findings.

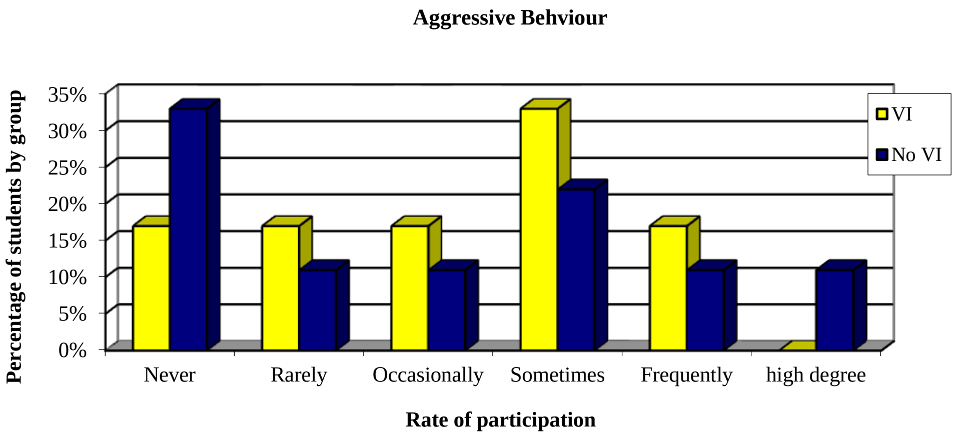

Figure 7. Reports from the parent survey on the rate at which students with vision impairment and sighted students behave aggressively in an indirect manner

Fighting

Twelve parents of children with vision impairment and nine parents of children with no vision loss responded to the question relating to fighting. The parents of the participants with vision impairment reported that six children in this category never started fights, one rarely began them, two others did so occasionally, two sometimes and one demonstrated this behaviour frequently. The majority of parents of the sighted group of children agreed. They noted that four never fought, three rarely fought, one did occasionally and the other frequently. As can be seen when comparing the two groups the majority of students (7) in each category never or rarely start fights. The findings are shown in Figure 8.

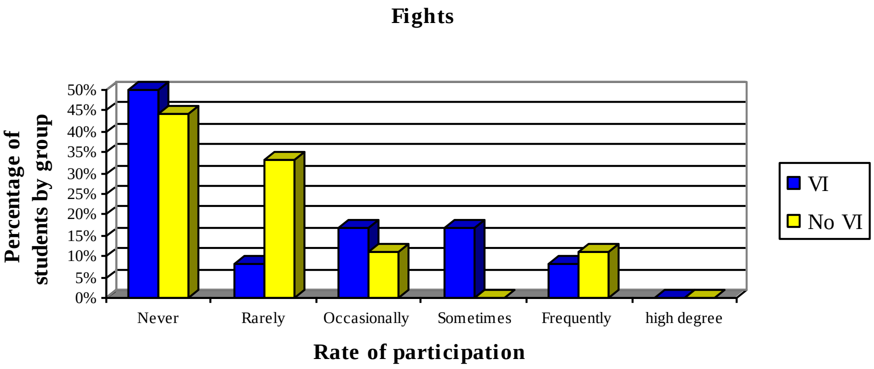

Figure 8. Reports from the parent survey on the rate at which students with vision impairment and sighted students start fights

Short temper

Twelve parents of children with vision impairment commented on whether or not their children had a short temper. As can be seen in Figure 9 young people with vision impairment were more likely to exhibit a short temper to a high degree than their sighted peers. Three of these children, compared with one of their sighted peers scored in the high degree range, and both groups of parents reported that one child lost his or her temper frequently. Of the others, two students with vision impairment lost their temper sometimes, four occasionally and two rarely. Four children in the sighted group lost their temper occasionally, two did rarely and the other never. Evidence revealed that the group of students with vision impairment in this study tended to exhibit a short temper more frequently than the children with no vision loss. The findings are shown in Figure 9.

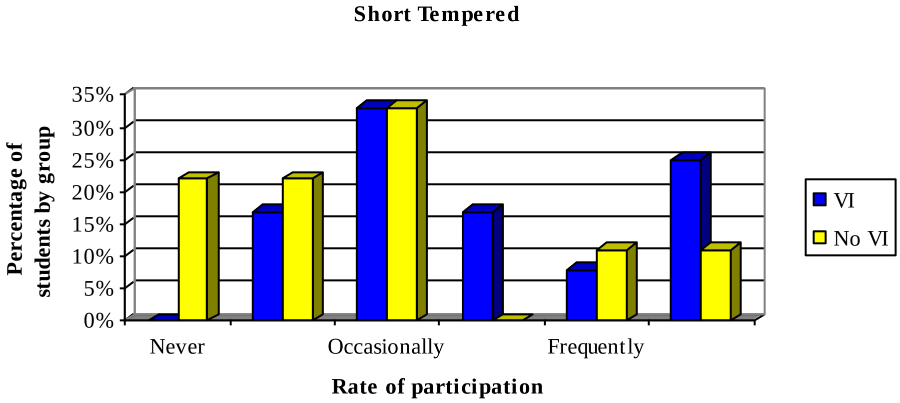

Figure 9. Reports from the parent survey on the rate at which students with vision impairment and sighted students display a short temper

Students' feelings are easily hurt

All twelve children with vision impairment in this study, according to their parents could have their feelings hurt easily (ie frequently or to a high degree). By comparison, the responses relating to their peers with no vision problems showed a spread from rarely to frequently. Two sighted children rarely had their feelings hurt, three had them hurt sometimes and four frequently. The findings are shown in Figure 10.

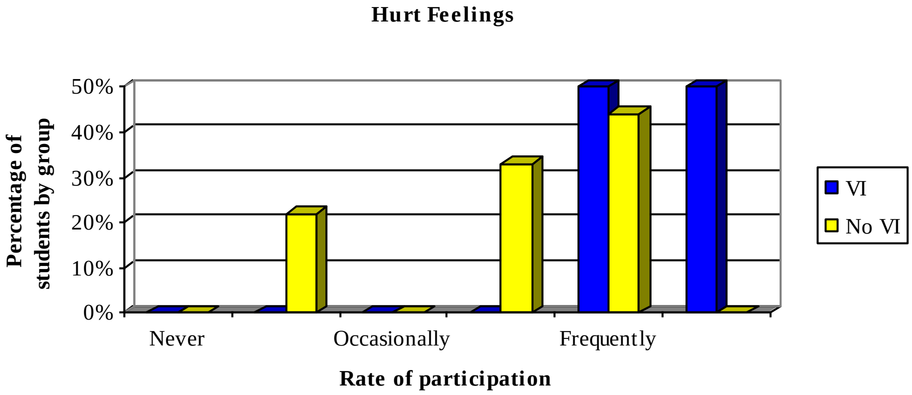

Figure 10. Reports from the parent survey on the rate at which students with vision impairment and sighted students have feelings easily hurt

Independence

Parents were asked to rate the degree to which they perceived their children acted independently. Twelve parents of children responded to this question and nine parents of the sighted cohort. Of interest is that the findings of this study revealed that the majority (eight out of twelve) students with vision impairment were perceived to act independently to a high degree compared with one sighted student. On the other hand where as three of the vision impaired group acted independently sometimes and one occasionally, four sighted children were reported to act independently frequently, three sometimes and one rarely. These findings are depicted in Figure 11.

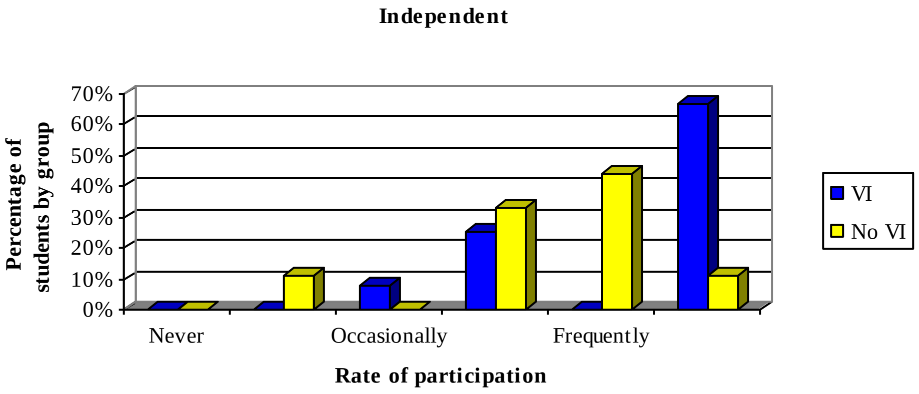

Figure 11. Reports from the parent survey on the rate at which students with vision impairment and sighted students act independently

Students who brag

The findings showed that according to their parents the 50% of students with vision impairment and 44% of their sighted peers bragged at least occasionally. Two students with vision vision impairment reputedly bragged sometimes and four occasionally six rarely bragged. By comparison parents claimed that three sighted students never bragged, two rarely did, one bragged occasionally, one sometimes and two frequently. These findings are depicted in Figure 12.

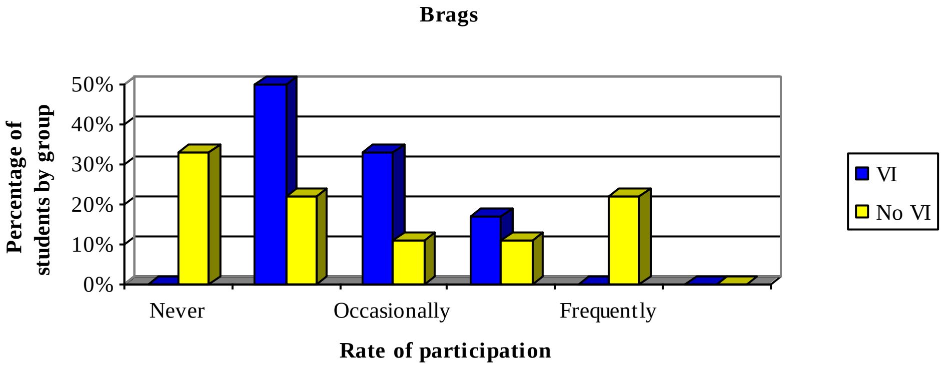

Figure 12. Reports from the parent survey on the rate at which students with vision impairment and sighted students brag

In summary, the majority of children with vision impairment were slightly more inclined to demonstrate aggressive behaviour than their sighted peers, according to the findings of the parent survey, however the majority in both groups never or rarely started fights. The findings also revealed that the participants with vision loss were more inclined to have a short temper than their sighted peers and to have their feelings hurt more easily. Whereas more students with vision impairment in this study, according to their parents acted independently to a high degree, a slightly smaller group of sighted students were reported behave in this way frequently. Finally the findings revealed that 50% of the children with vision impairment rarely bragged, whereas 55% of the sighted group never or rarely displayed this behaviour.

Conclusion

Social skills are complex. They involve a range of abilities, behaviours, social understandings and knowledge in order to establish, maintain and develop satisfying social relationships with others. In an environment where social competence is valued, and perceived to be a crucial element in successful interaction with others, it is essential that children have access to appropriate social skills training by informed professionals. When children have vision impairment which affects their lives in many ways, it is critical that professionals understand how their condition may limit their social skills and social behaviour and hence interactions with friends. The inability to use vision efficiently in social situations, understand social dynamics, and appear to act differently from classmates makes this group of children more vulnerable, and more at risk of social isolation. Not only do these children have to deal with functioning differently in a school culture that values academic success, social ability, and conformity, they have to achieve in an environment that is not always conscious of their difficulties, appropriate to their needs, and valuing of diversity.

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Why are sport and physical activity important for people with vision impairment?

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Abstract

Access to physical education and sport is usually limited for young people with vision impairment. This means that pupils with vision impairment miss activities undertaken by their peers. Students in a unit environment are offered a greater variety of leisure and sport activities with their sighted peers. Physical fitness is a critical factor in meeting the demands of everyday life for individuals with vision impairment, demands that are complicated by restrictions in mobility. Children with vision impairment should be introduced to all the sports, games, and activities that their sighted peers learn. Adapting sport activities, games or leisure activities increases the opportunities for people with vision impairment to have fun, improve their skill development, make friends and enhance their self-confidence.

Introduction

Frequent physical activity has benefits for an individual's psychological and physical health, as much evidence indicates that there is a reduced risk of diabetes, high blood pressure, obesity, heart disease and stress related illnesses (Heath & Fentem, 1997) and yet the number of children and adolescents who are obese is at an all-time high in Australia (Healey, 2009). In several studies, children and adolescents with vision impairment have consistently displayed lower levels of fitness than their sighted peers (Kozub, 2006; Zwald, 2008). It might be argued that the necessity to be in good physical condition becomes more important for individuals who are blind or vision impaired, as the activities of daily living require greater energy output when carried out by a person with vision impairment (Lieberman & McHugh, 2001; Nakamura, 1997).

The purpose of this paper is to assert that sport and physical education are a desired and valued goal for individuals with vision impairment.

Lack of access to sport and physical education for students with vision impairment in integrated settings

Access to physical education and sport is usually limited for young people with vision impairment. Lack of access impedes students with vision impairment's participation in physical education classes, and in school sport (Zwald, 2008). Physical education teachers and primary classroom teachers encounter a twofold difficulty when they have children with vision impairments in their classes; their training usually does not prepare them to teach physical education to students with vision impairment (Conroy, 2012) and they rarely have enough time for individualised teaching (Herold & Dandolo, 2009). This means that pupils with vision impairment miss activities undertaken by their peers. Also support teachers (vision) as a whole usually have little or no special training in teaching a wide range of physical education or sports skills.

From my experience as a support teacher (vision) all too often, students with vision impairment are placed in inclusive physical education classes without the necessary support systems. Support can be provided by teachers, teacher aides, parent volunteers or peer tutors and gives the pupil with vision impairment the opportunity to successfully participate in physical education activities.

During physical education the pupil with vision impairment is generally singled out and made to undertake other activities e.g. recording game scores, delivering messages. Teachers usually make these decisions without consulting the pupils and as a consequence isolate them from their friends during physical education. The reasons behind such unfairness might be due to a lack of experience or lack of understanding about pupils with vision impairment. The teachers have either low or no confidence of their student’s performance in physical education and sport.

The decision by teachers to isolate pupils with vision impairment from their sighted peers during physical education and sport periods can have broad negative consequences that might lead to social isolation and restricted peer interaction. From personal observations, pupils with vision impairment tend to choose to spend playtime with adults in the school and some spent time engaged in solitary play in the playground. The tendency towards an inactive lifestyle is increased as the students who are vision impaired grow older, since primary aged children are usually more active than secondary aged children (Ayvazoglu, Oh, & Kozub, 2006; Longmuir & Bar-Or, 2000).They become adults who are incapable of enjoying basic movement opportunities and who remain inactive during their lives.

Benefits of special education units (vision) for engagement in sport

As well as the lack of time to teach individualised physical education and sport to pupils with vision impairment, mainstream schools cannot usually provide instant access to the modified physical education equipment that is available for larger numbers of pupils in a special education unit attached to a school.

Also many school gyms and ovals do not meet the needs of pupils with vision impairments and some are unsafe e.g. lighting in gyms and holes and poles on ovals. From my observation there is more of a risk of injury in having just one pupil with vision impairment in a mainstream school, than in having a unit-supported group of pupils with vision impairment, because the more they are visible in school by staff and pupils alike, the greater will be the recognition of them and of their needs.

From my experience as teacher-in-charge (vision) and teacher (vision) attached to support units, students in a unit environment are offered a greater variety of leisure and sport activities with their sighted peers. They are involved in all school sport and physical education activities, athletic and swimming carnivals, school camps and excursions with sighted students. Students with vision impairment in integrated settings either choose or are encouraged not to attend and participate in athletic and swimming carnivals and many do not attend school camps. Most students in integrated settings only attend a once-a-year specialised camp for students with vision impairment.

People with vision impairment and sport. A large proportion of individuals with vision impairment do not become involved in sport, because of their own low self-perceptions, learnt through interactions with society's non-disabled members and negative depictions in the media, that lead to low self-esteem and a negative regard for the capabilities of their own bodies (DePauw, 1997).When people with vision impairment are constantly confronted with negative perceptions about their abilities to perform tasks, and also exposed to photographs and articles of 'physical perfection' in the media, so that it is little wonder that many people with vision impairment experience low self-esteem (Tuttle & Tuttle, 2004).

Social skills of people with vision impairment. Most people with vision impairment, exhibit adequate psychosocial adjustment but many lack important social skills areas (Wolffe & Sacks, 1997). Some children and adolescents with vision impairment are more socially immature than their non-disabled peers and experience difficulties making friends (Huurre & Aro, 1998; Huurre & Aro, 2000; Kef, Hox, & Habekothe, 2000; Tuttle & Tuttle, 2004). A particularly important study found that school students with vision impairment had low levels of perceived control over their ability to build and hold friendships (Robinson & Lieberman, 2004).

Importance of sport for social skills development. However, if these psychosocial barriers can be overcome, several studies have found that individuals with vision impairment who participate in sport develop qualities such as achievement and mastery, and sport often encourages the development of self-efficacy, goal-setting, cooperation, competitiveness, self-confidence, independence and social inclusion (Blinde & Taub, 1999; Lieberman & McHugh, 2001; Ponchillia, Strause, & Ponchillia, 2002; Shapiro, Lieberman, & Moffett, 2003; Shapiro & Martin, 2010) Individuals with vision impairment need more support in their psychosocial and physical development than their sighted peers, and this support can be provided by encouraging people with vision impairment to engage in sport and physical activity (Colak, Bamac, Aydin, Meric, & Ozbeka, 2004).

Importance of sport for the development of motor skills and fitness. The importance of movement for all children in their early learning and especially for children with vision impairment has been well documented (Lieberman & McHugh, 2001; Longmuir & Bar-Or, 2000; Sherrill, 1998; Williams & Armstrong, 1996; Zwald, 2008). Vision plays a major role in both the maintenance of balance and its recovery (Bouchard & Tetreault, 2000). Vision impairment can affect the equilibrium of proprioceptive systems, resulting in problems with balance, posture, coordination, tension of the neck and shoulder muscles, and loss of spinal rotation and reciprocal arm swing (Welsh, Blasch, & Wiener, 1997). Dynamic balance results from the integration of several sensory and motor functions, including vestibular, proprioceptive, and visual inputs. As a consequence, individuals with vision loss have decreased postural stability (Ray, Horvat, Croce, Christopher Mason, & Wolf, 2008). Also, the physical condition of individuals with vision impairment as a group is known to be poorer than that of most persons in the general population (Kozub, 2006). Some individuals with vision impairment may develop poor circulation, limited lung capacity, poor muscle tone, poor posture, and a tendency to become overweight (Zwald, 2008).

Zwald (2008) has proposed that physical fitness is a critical factor in meeting the demands of everyday life for people with vision impairment, demands that are complicated by restrictions in mobility. Individuals with vision impairment who have movement problems often experience reduced self-worth and self-perceptions (Shapiro, Moffett, Lieberman, & Dummer, 2008). Sport and physical activity can promote the acquisition of daily living skills, orientation and mobility skills needed by people with vision impairment by helping to develop their physical fitness and psychomotor abilities (Lieberman & McHugh, 2001). Sport and physical activity play a significant role in the development of qualities and skills that can personally empower individuals with vision impairment (Blinde & Taub, 1999).

In a Turkish study (Colak, et al., 2004) significant differences were found between goalball players and non-goalball players, as it was found that non-goalball players were inferior in all motor fitness areas compared with goalball players. This study suggests that goalball may be considered a very effective option in improving motor skills in individuals with vision impairment.

Physical activity and sport for young people with vision impairment. Specific sports skills can be developed in young people with vision impairment in individual as well as team sports (Ponchillia, Armbruster, & Wiebold, 2005). Also skills and love of movement can be acquired through active engagement in physical activity. Children with vision impairment should be introduced to all the sports, games, and activities that their sighted peers learn (Ponchillia, 1995).

Youngsters with vision impairment have the capacity to be involved in a number of physical activities, including bike riding, swimming, in-line skating (with a friend serving as a guide), and jogging in a safe area with a buddy (Ponchillia, 1995). Sporting activities for the child with vision impairment might include a mix of open and closed sports. Open sports have variables that change often and the games are unpredictable as the speed, angle, and direction of the ball and defenders change often and without notice e.g. tennis, volleyball, football and soccer. Closed sports are usually considered more suitable for the child with vision impairment as they are consistent and predictable. Good examples of closed sports are archery, bowling, shot put and discus (Ponchillia, 1995).

Sports that are available to paralympians with vision impairment include tandem bike riding, running with a sighted guide, goalball, swimming, judo, equestrian, five-a-side football, rowing and sailing (Brittain, 2010) can also be introduced to young people with vision impairment (Ponchillia, 1995). Such leisure activities such as bowling, dance, horseback riding, and many other lifetime physical activities can be experienced safely and lead to social networks of friends (Ponchillia, et al., 2005). This allows children with vision impairment to stay within their capabilities but extend beyond their experience.

Physical activity and sport ideas for parents, teachers and teacher-aids. Before commencing physical activity ask the child (a) what they are able to see and (b) which objects and conditions present problems and (c) at what distance an object is visible. Allow the child to position herself or himself where they are able to see best and try to ensure that lighting conditions match the needs of the vision impaired child. Also permit the pupil to explore the entire physical environment so they can become familiar with the area. Keep the instructional areas as uncluttered as possible and if major changes are made in the environment, the child should be told and allowed to explore the new area.

Thoughtful modifications, for example changing the ball colour to one that contrasts sharply with the background, are sometimes the only adjustments needed to enable a student with mild vision impairment to participate fully in sport and physical education. Standard equipment can be adapted to meet the needs of the child with vision impairment e.g. audible bells in balls, guide ropes for running using the buddy system, light coloured equipment (preferably white, yellow, or orange, unless dark is needed to provide contrast), proper lighting and colour contrast, larger equipment and coloured balls, mats, cones and goals. A ball can be taped with bright yellow tape to contrast with the floor and walls. Colour tape can also be used to mark the playing areas on the floor or walls. A rug or rubber mat on the floor can be employed to mark a space for exercising. A rubber carpet runner can be used next to the wall so that child knows when they step onto a changed surface that they have stepped out of bounds and the change in surface also signals a warning to the child that a wall or object is nearby.

As far as possible stand near the youngster so that instructions can be seen and heard and provide arm support, if needed, on jumping activities. Touch can be used to demonstrate body movements to the child. Always use descriptive verbal instruction e.g. when teaching to hop, say "stand on your left foot, raise your right foot, and jump in the air on your left foot". As far as possible direct the pupil by using directional words and landmarks in the playing area.

Teach physical education and sporting skills by breaking skills into small steps and move from less difficult to more difficult skills and also collapse skills into their component parts e.g. catching a ball- bounce the ball to the student a short distance away and gradually increase the distance, but eliminate the bounce. Different types of balls can also be employed such as a polystyrene ball to lessen the impact when a ball makes contact with a pupil. The movement of the catching object can be significantly reduced by using a balloon instead of a ball. When throwing at a target they should be moved closer or made larger and a sound can be used behind the target. Place a ball on a tee stand for softball games and employ a larger coloured ball.

A sighted running friend can provide assistance by holding hands, using brush contact (touching hand, fore arm, wrist or any part of the arm), or a loop of a flexible piece of material can be held between friend and the pupil with vision impairment. Pupils can also run by self-holding onto a rope stretched between two points.

Importance of maintaining the independence of children with vision impairment

Parents, teachers, teacher-aids should guide, but not over protect, the child with vision impairment. Always encourage the child to work as independently as possible so they do not become over-reliant on assistance. Parents, teachers and teacher-aids can be a barrier to their independence due to concerns about personal safety and they do not have enough confidence to let the children with vision impairment do physical activities on their own. Over-protectiveness and lower expectations of parents and teachers often contributes to the formation of sedentary tendencies among children who are vision impaired.

Well organised physical activities that make use of appropriate equipment maximise the abilities of a young person with vision impairment and minimise any special challenges they may face in life (Shapiro, et al., 2003). Adapting sport activities, games or leisure activities increases the opportunities for children with vision impairment to have fun, improve their skill development and enhance their self-confidence (Lieberman & Cowart, 1996). Learning a new sport, game or recreational activity improves the quality of a youngster’s life and creates an overall feeling of well-being and competence (Lieberman, Schedlin, & Pierce, 2009). A study has shown that having friends, relationships with peers and able to interact and socialise with peers represents a high level of peer acceptance, that encourages children and young people with vision impairment to be active participants in class and the broader community (Humphrey & Lewis, 2008).

In conclusion, there seems overwhelming evidence that physical activity and sport are important for the health and well-being of people of all ages who have vision impairment (Blinde & Taub, 1999; Shapiro, et al., 2003; Shapiro & Martin, 2010). If students with vision impairment have the opportunity to participate in physical education and sport programs that provide them with the appropriate instructional strategies and activities to fit their special needs, they are more likely to develop to their maximum potential. Sport and physical activities are enjoyable, build self-confidence, create friendships, enhance mobility and improve health and fitness. It could be argued that sport, physical activity and physical fitness may be more important for persons who are vision impaired than for the rest of the population.

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Social problem solving: A case study of a student with congenital blindness

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Abstract

Difficulties with social awareness, social reciprocity, and problem-solving skills have been recognised in the literature as important prerequisites to the development of friendship and peer support. Children with vision impairment and blindness are at risk of having difficulties with the pragmatic aspects of language. This article presents an intervention program centred on problem solving within social situations for a child with congenital blindness. This intervention program resulted in an encouraging development of her problem-solving skills. It also seemed to have a positive impact on this child's psychological well-being, and on her ability to engage socially. The paper concludes by identifying the practical implications for this child of her newfound skills.

Introduction

The ability to reason and solve problems and the ability to engage and persist in challenging tasks are some of the most critical skills for school success (Zelazo, Carter, & Reznick, 1997). Greenwood, Walker, Carter, and Higgins (2006) stated that children who can approach a problem, attend to the critical aspects of the solution, try out potential solutions, and persist until the problem is solved are learning how to learn. Gibbs and Teti (1990) highlighted the fact that problem solving affects children's success throughout school and later life, in academics, creative arts, and interpersonal relationships. Thornton (1995) argued that the ability to identify a goal, to work out how to achieve that goal, and to carry out that plan is the essence of every intelligent activity.

A problem is defined as any life situation or task that requires an effective response that is not immediately apparent or available because of the presence of one or more obstacles (D'Zurilla, Nezu, & Maydeu-Olivares, 2004). A distinguishing feature of a problem is that there is a goal to be reached, and how that is achieved is not immediately obvious (Robertson, 2001). A problem, then, is a situation that needs to be fixed or changed. An interpersonal problem is a special kind of real-life problem in which the obstacle is a conflict in the behavioural demands or expectations of two or more people in a relationship (D'Zurilla et al., 2004). A problem can be an event that is time-limited (e.g., *I have done my homework but have left it at home*) or a series of events that are related in some way (e.g., *I think I work really hard at Science but I keep failing all my tests*).

D’Zurilla et al. (2004) defined problem solving as a conscious, rational, effortful, and purposeful activity. The authors stated that, depending on the problem-solving goals, the process might be aimed at changing the problematic situation for the better, reducing the emotional distress that the problem produces, or both.

A solution is a situation specific coping response and response pattern that is the outcome of the problem-solving process when it is applied to a specific problematic situation (D’Zurilla et al., 2004). An effective solution is one that achieves the problem-solving goal, while at the same time maximising other positive consequences and minimising negative consequences.

Problem-solving skills evolve through experience and dynamic interaction with a problem, and are essential for the development of social skills (Thornton, 1995; Wolffe, 2006). The development of cognitive social interaction is dependent on the ability to problem solve and resolve conflicts (Guralnick, 1990). Thornton (1995) stated that in problem solving, confidence can be more important than skill.

Communication Factors

Trevarthen (1993) stated that the fundamental carriers of communicative information include changes in the pitch or volume of the voice, pre-beat syllables, suffix morphemes, rhythmic emphasis, eyebrow movement, hand gestures, head movements, and gaze shifts. Much of this communicative information is obtained through the visual / gestural system. Joint attention and mutual gaze are also very important for the conveying of information. Paralinguistic information is another communication factor capable of conveying contextual information (Freitas & Kouruopetroglou, 2008). While children with vision impairment rely on vocal changes to react to the other person’s intent, sighted persons can use visual changes such as facial and body expression to construct a causal knowledge of the states and feelings of the other person (Baron-Cohen, 2006). However, the meaning behind the vocal changes might need to be taught. For example, an utterance said sarcastically might be interpreted literally. Children with vision impairment, then, often lack key information about the emotions, intentions, and desires of the other person (Glumbic, Jablan, & Hanak, 2011). Hobson (1994) argued that the participation of children with vision impairment and blindness in these affective interactions will influence their cognitive functioning.

As children develop self-awareness, the traditional values and ideals of parents and significant others are internalised. Children consciously and unconsciously imitate the behaviour and attitudes of those who most influence their lives. However, children with vision impairment and blindness might be restricted in their development of many aspects of self-worth because of their difficulties with interpersonal communication (George & Duquatti, 2006).

Self-Awareness

The development of self-awareness in children with vision impairment and blindness might be at risk because of restraints on the children's' capacity to share and respond to the feelings of the other person (Campbell, 2007). They might not see the range of individual styles and registers appropriate for particular interactive contexts. Furthermore, they might not be able to observe how to interact with objects and other people; that is, they might not be able to *oversee*. Even something as simple as sitting on a chair might need to be explained and taught. Problem-solving skills might be delayed as these children might not be able to see how to manipulate their environment (Wolffe & Sacks, 1997). These children might not, for example, oversee the preparation and organisation that goes into leaving the house. This lack of natural stimulation from the visual / gestural environment and the simultaneous use of facial and body expression in a sighted parent / child dyad results in not only delayed affective development but also different patterns of affective maturation (Campbell, 2003).

If children are to develop self-realisation, there must be confirmation about what they are saying or doing. Confirmation about what they are saying or doing enables children to understand that they do in fact know much more. If this confirmation is denied, children might become withdrawn or aggressive (Semrud-Clikeman, 2007).

Children with vision impairment and blindness often might be unable to communicate fluently with others in their environment, and this could lead to ineffective reinforcement (McConnell & Odom, 1999). These authors stated that the children lack the skills necessary for establishing and engaging in positive social relationships and receive fewer positive responses to their social interactions, demonstrate less interest in their peers, and are more prone to social isolation. Wolffe and Sacks (1997) also found that adolescents with vision impairment engaged in more passive or solitary activities that did sighted adolescents. The similarity in perceptions of social acceptance between children and youths with vision impairment might reflect the consistency of rejection by peers and loneliness experiences by students with vision impairment throughout the school years (Shapiro, Moffett, Lieberman, & Dummer 2005).

Friendships

The term 'friendship' is rooted in a principle of equality and mutual engagement between peers (Pahl, 2000). Social inclusion relies heavily on the exchange and affirmation of self-identity that is afforded through friendships. Friendships are voluntary and bi-directional. The maintenance of friendships is strongly dependant on communication. Pinquart and Pfeiffer (2011), in their study on the prevalence of bullying, found that students with low vision reported higher levels of peer-victimisation than sighted students and blind students. The authors stated that support from peers buffered the effects of victimisation on the psychological adjustment in adolescents with vision loss but not in their peers without vision loss. However, De Boer, Pijl, and Minnaert (2012) presented a review of the literature concerning peers' attitudes towards students with disabilities. The authors' review revealed that the peers generally hold neutral attitudes, and that the attitudes of the peers were related to the social participation of the students with disabilities.

It has been demonstrated that children with congenital vision impairment and blindness have difficulties with the use of language for pragmatic and social purposes (James & Stojanovik, 2007; Tadic, Pring, & Dale, 2010). Some children with vision impairment and blindness have excellent language skills. However, the Canadian National Institute for the Blind in their literature review (n.d., retrieved 16 February, 2013) stated that the frequency of language disorder amongst children with low vision has been reported as over 80% compared with 25% of their peers with normal sight.

Children are often too young to accommodate the interactions of a peer with a communication difficulty. They might not know how to talk to their peer and their attempts often might result in a highlight of the communication problem. Friendship and social reciprocity are important influences in the emotional development of all. Giving the child with a communication difficulty the capability of engaging in meaningful conversations is, therefore, vital to the development of friendships and peer support.

Murphy and Stewart (1994) noted that the combination of self awareness, social reciprocity, and problem-solving skills seem to be important prerequisites to the development of support through friendship.

Purpose

Mary is a congenitally blind child with the above outlined difficulty characteristics. When she was in Year 7, it was noted that her poor self-awareness and problem-solving skills were hindering her emotional development.

The purpose of this case study was to determine, for this student,

1. whether an intervention program would increase the accuracy of problem-solving skills
2. whether the skills gained through the program would be maintained outside the structured situation and generalised across a variety of settings and individuals

3. whether any newly acquired skills would result in improved self-awareness and social reciprocity.

Participant

Mary is a congenitally blind child. She was born with bilateral anophthalmia with gross abnormalities of both orbits demonstrated on MRI as well as some central nervous system abnormalities including an inferior diverticulum of the third ventricle in the expected position of the normal chiasmatic recess. Anophthalmia is a rare condition in which one or both eyes do not form in pregnancy. Mary was born with the absence of both eyes, with resultant blindness. No other family member is blind. Mary's younger brother has competent speech and language skills.

Mary initially attended a Special Education Developmental Unit (SEDU). At the end of her preschool years, summary reports included the following information:

- she received weekly individual and group speech and language therapy sessions at the age of 5 years, targeting responding to questions and concept development;
- her language deficits could make it difficult for her to cope in the Year One; and
- Mary then attended a primary school Special Education Programme (SEP).

Severe speech and language delays were reported throughout Mary's schooling. Individual Education Plan goals always reflected language difficulties and targeted oral language development. She continued to attend regular individual speech and language therapy sessions throughout primary school. Speech therapy targets throughout her primary schooling included: articulation, phonological awareness, syntax, semantics, and story comprehension. Mary's rate of progress was slow, but improvement was noted.

In March 2012, when Mary was in Year 7, language assessment revealed that many areas were now tested as being within the average range. On the language tests that measured knowledge of the meaning of words, use of words in comprehension and expression of language, the ability to recognise and use words that are similar or opposite in meaning, the ability to derive word meaning in context, and the ability to use grammatical structures, Mary's results converted to standard scores within the average range of functioning for her age. Mary experienced particular difficulty with tests involving reasoning and inferencing skills:

- On The Listening Test (Barrett, Huisingh, Zachman, Blagden, & Orman, 1992), she had most difficulty with the subtest involving reasoning skills
- The results of the Comprehensive Assessment of Spoken Language (Carrow-Woolfolk, 1999) indicated that she might have difficulty understanding ambiguous

language, reflecting on words, reasoning, and deciding on the appropriateness of words for the other person or context

- On the Test of Reading for Inferential Comprehension (Murphy, 2006), her ability to make inferences based on a given text was severely delayed and was developing differently from the predicted pattern of responses for a student at her comprehension level.

Background

It was noticed by the significant people in Mary's environment that she was a passive participant, waiting for others to tell her what to do and what to think. Mary would agree with everybody and paraphrase their ideas as her own. Based on these observations and the test results, and in consultation with Mary's teacher and her mother, it was decided to target problem solving and self awareness. Problem solving was a particular area of concern, both at school and at home. An important prerequisite skill for problem-solving training is proficient comprehension and use of language (Frauenknecht & Black, 2004). As many of Mary's language skills were now within the average range for her age, it was felt that she would be able to cope with a problem-solving intervention program. Her history of language difficulties would indicate a difficulty developing good problem-solving skills by herself. Therefore, she needed direct instruction to learn how to solve problems in a logical manner. This program is outlined below.

Programme Components

Mary needed to develop a general awareness of language function and use so that she could learn to monitor and control her own organisation and thinking strategies for acquiring new and relevant information and for manipulating her environment.

Thus, an environment was established where the function and purpose of each session was explained very clearly. Mary was also encouraged to think of the purpose of each skill as it was learned. In addition, it was carefully explained to Mary that there were no right or wrong answers; that her responses were just what she thought; that problems can be solved in different ways and outcomes can be different but still effective. Reciprocity as a tool was inherent to the solving of problems. This exchange of, and offers of, support, ideas, and feelings is an important basis for an understanding of ourselves and the other person (Becker, 2005).

A program was devised, instigated, and conducted by her speech language pathologist to meet the need for direct instruction in problem solving. This program concentrated on four skills:

Skill 1: Orientation to the environment

Orientation to the environment focussed on Mary being aware of her environment through the senses available to her (for example, *'You can hear water running. Where might you be?'*). Paying attention to the environment will aid the student in knowing where she might be and in using that information to solve how to find a specific location. In addition, Sacks and Wolffe (1998), in their ethnographic study of adolescents with vision impairment and with normal vision found that two of the three students differed most in the amount of independent travel they did compared with their peers with sighted vision and were less able to socialise after school. The authors suggested that orientation and mobility might be a contributing factor to the students' levels of socialisation.

Skill 2: Orientation to self

Orientation to self included being able to describe her personality, her likes and dislikes, her helpers in different situations, her friends in given situations (at school, in her neighbourhood), and her future goals.

Skill 3: Problem solving

The problem-solving program included instructions that outlined the process. Problem solving starts with an initial situation involving a problem and ends with a goal or solution to the problem. There are several steps involved before the solution is achieved. The solving of the problem is actually working through those steps to then reach the solution. Each step was carefully and unambiguously explained and taught. The instruction steps involved were:

- learning definitions and meanings for the vocabulary words
- identifying the problem from a given scenario
- recognising signs of different feelings (self; others)
- categorising the problem (is the solution easy to see or will it be revealed only after much reflection)
- determining who is responsible for the problem solution
- recognising the difference between an impulsive reaction and a carefully considered reaction
- thinking of multiple solutions to the problem
- thinking what might happen next for each solution
- choosing the best solution
- planning the solution
- trying it.

These steps are consistent with other social problem-solving models that apply specific steps to achieve a logical process to enable a solution to be attained. Frauenknecht and Black (2004), for example, used eight (similar) steps in their instruction for organising thinking for social problem solving.

Skill 4: Justification

Justification focussed on asking Mary to explain her thought processes. Questions asked often began with ‘why ...’, ‘how ...’, ‘what would happen ...’.

Mary received weekly individual speech and language therapy sessions from April 2012 and throughout the year, focusing on these targets. Weekly follow-up activities were given to her SEP teacher and to her mother, both of whom provided program support. Mary’s orientation and mobility teacher also supported the program by focusing on problem solving.

Mary’s SEP teacher also extended the activities to include practice in incidental behaviours / situations, that is, in problem situations that occurred naturally throughout the day. Once Mary’s confidence had improved, her teacher added problems about the environment. Mary’s teacher used techniques developed through her own experience in this profession, including:

- sabotage situations (e.g., someone sitting on her seat)
- prompts (e.g., *I wonder where you used your cane beforehand?*)
- wait time given to see if she could work out the solution herself
- modelling (e.g., *If I lost my cane, I would try to remember where I had used it beforehand*)
- taking the unknown to the known (e.g., *Remember when you lost your cane yesterday. What did you do to find it?*)
- praise (including a positive summary of how she solved the problem).

Data Collection

Merriam (1998) used a paradigm which focussed on the individual as a means of evaluating and interpreting an aspect of human behaviour. She identified three primary sources of data commonly associated with case studies: interviews, observations, and documents. Data collection included interviews with Mary, her teacher, and her mother. Classroom observations were completed. Documentation from the formal language assessments provided additional information on her ability to infer, reason, and problem solve.

Effects of Programme

The results of this program were encouraging and positive. Interviews with Mary, her teacher, and her mother indicated that her perception of herself improved. At the beginning of the program, Mary would passively accept the views and feelings of her conversation partners as her own, often even agreeing with opposing viewpoints. Orientation to herself and her environment was initially a strong component of the program. Eventually, her self-awareness improved, and she was not waiting for others to tell her what her likes and dislikes were, who her friends were, what subjects she liked, what she could do when stressed, what her feelings to situations and information were, how she communicated, how to set goals.

Mary's problem-solving skills have also shown improvement. At first, even what a problem was, eluded Mary. She was so accustomed to waiting to be told that she had not encountered the concept of a problem. Learned helplessness was evident in her interactions. So initially, appropriate vocabulary and definitions needed to be taught and used in many different ways. Identification of problems and explanations were required. At first, Mary would repeat the information given to her. At the end of the program, she was able to look for clues in the information to decide on the problem. She was also able to explain why a given situation might be a problem. Mary can now decide on an appropriate reaction to a problem and justify her reasoning. She is able to classify problems. She enjoys brainstorming idea solutions for a given problem. In the classroom, Mary still needs time to think through the problem, but if afforded this time, she can decide on the solution. She has also learned that if she cannot find an appropriate solution, she can ask for help.

Conclusion

Prior to this intervention, Mary exhibited poor self-awareness and problem-solving skills. Post-intervention data indicate development of the ability to look for clues in the information, to explain why a problem might exist, to decide on an appropriate reaction, to justify her reasoning, and to classify problems. The narratives of Mary's significant stake-holders suggested that her self-awareness had also improved and that she was able to form positive friendships. This combination of orientation to the environment and to self, problem solving, and justification, therefore, provided the means for Mary to develop friendships and active participation in social interactions.

Reciprocity was an integral component of the program and proved effective as a tool for developing problem-solving skills. She quite enjoyed the idea, for example, that her speech language pathologist was asking for help to solve her problem of losing her purse. Mary also loved to discuss different reactions to a problem and her sense of humour provided many interesting responses. For example, when asked to provide four different responses to the problem of failing an English test, one response, accompanied with great laughter, was to throw the paper in the bin.

An important part of the program was the development of a positive, encouraging environment in which Mary could learn and practise at her own rate and this was realised in her full participation and enjoyment of the program. Information from the narratives indicated that her self-esteem and confidence were much stronger at the end of the program.

Outside the structured speech therapy situation, Mary presented as a more confident student with a more positive self-esteem. She seemed proud of her efforts to solve her problems, saying upon reflection that she was "growing up". Narrative and observation data indicated that her confidence and positivity together with her new belief that she had views of value (and did not need to just paraphrase the other person's utterances) resulted in peers being more willing to engage her in a conversation. At home, too, her mother commented that she was more independent and was asking lots of questions. She was very pleased with her progress in these areas.

Perhaps the final comment should be Mary's. When asked what class subject she liked best, she said 'speech therapy'. When asked why, she replied, 'It's fun, we talk about things. We talk about all sorts of things. We talk about new words and problems and stories and all other things. It's really good. It's good to talk about things. We discuss things and I can ask questions. You don't tell me what to do or show me what to do; we can think about the problem together. It's so much fun.'

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The educational experiences of five former students with vision impairment participating in education in Papua New Guinea: A qualitative study

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Abstract

In this study a qualitative research methodology was used to investigate the educational experiences of five former students with vision impairment (VI) in PNG who received specialist services during their schooling. The participants were purposively chosen to provide the widest possible range of information (for example: three female, two male; one with low vision, four functionally blind; with each participant from a different geographical region of PNG). Semi-structured 60-minute one-to-one interviews were employed to explore whether suitable accommodations and modifications were made for the students and to assess whether or not they thought they received an inclusive and an appropriate education. The semi-structured questionnaire was developed to allow respondents to freely express their own opinions. Each interview was conducted in the participant's own natural environment and in their preferred language, i.e., either English or Tok Pisin (*Talk Pidgin*). Results indicate a difference in quality of service for former students who were functionally blind compared to that provided for the student with low vision. Three of the functionally blind students found it necessary to leave their families, home communities, language and culture to attend school away from their villages, whereas the student with low vision continued to live in his own local community. The functionally blind students were provided with alternative media such as braille whereas no specialist provisions were made available for the student with low vision. All five former students reported a lack of service provision that focused on developing such independence skills as Orientation and Mobility and only one student who was functionally blind, the recipient of sponsorship by a wealthy Australian, felt he had achieved his best possible outcome.

Introduction

Research indicates that most students with vision impairment (VI) in PNG do not receive adequate support necessary for them to fully participate in inclusive school learning activities. According to the Papua New Guinea National Department of Education (NDoE) only 366 students of an estimated 3 to 5,000 children and adolescents with VI under the age of 16 received specialist education services in 2009 (Keeffe, 2012, NDoE, 2009). As the majority of these 366 students were functionally blind, students with low vision tend to miss out on any specialist services whatsoever.

In 2006 the International Council of Education of People with Visual Impairment (ICEVI), in partnership with the World Blind Union (WBU), launched its Education for All (EFA): A global campaign to promote the education of all children with vision impairment. Later in 2011, ICEVI identified Papua New Guinea as a focus country in the Pacific region. This means that educational services for students with VI in PNG will be in the international spotlight (ICEVI Education for All, 2011). The purpose of this research therefore is to investigate whether or not the lived experiences of five of those 366 students identified as receiving specialist services in PNG align with international standards regarding an inclusive and appropriate education.

This study uses a qualitative research methodology. The five former students were interviewed on a one-to-one basis for 60-minutes in their own natural environment employing a semi-structured questionnaire. The study was designed to examine the particular social and educational experiences of participants, in order to identify whether or not accommodations and modifications were made to them during their time at school. An additional aspect of the research is to investigate whether or not the former students themselves believe they received an inclusive and an appropriate education. As this research is qualitative no attempt will be made to generalise regarding research findings to the wider population.

Background

There are many reasons to help explain why only about 10% of children and young people with VI under the age of 16 currently receive specialist education services. PNG is one of the most geographically isolated, culturally and linguistically diverse countries in the world with a predominately agricultural population living in mountainous rural areas accessible only by water, air or foot. Additionally, PNG is a developing country with limited infrastructure and significant economic challenges. Due to a low tax base and an emerging education system, Universal Basic Education (UBE) has not yet been achieved (State of Education Report, 2008). The majority of the very limited resources are therefore currently spent on trying to achieve UBE, with little money left over to cater for children and young people with disabilities or attend to any other social justice issues for that matter. A further limiting factor is the negative attitudes and low expectations of the largely uneducated general population towards people with disabilities.

Special educational services are provided in partnership with charities through 21 Special Education Resource Centres SERCs). These are located in the major population centres in the country's four regions: Southern, Highlands, Islands and Momase. Pragmatic, logistical, sociocultural, historical and economic factors dictate that only those students identified as having the most extreme needs and who are able to independently access services receive special education support (Aiwa & Pagliano, 2011a). For children with VI, this translates into those who are functionally blind (visual acuity of <3/60) and those with low vision (visual acuity of <6/18). Students with low vision, who have sufficient vision to read large print, do not tend to receive specialist support (Aiwa & Pagliano, 2011b).

The role of the SERCs is to support the appropriate education of students with VI. Pagliano and Gillies (2012) describe an appropriate education as: "one that is accessible, provides equal opportunity, encourages self-sufficiency and guarantees that each student achieves the best outcomes possible" (p. 204). First identified in the landmark 1975 US legislation (PL94-142), these four standards provide an expedient measure to check whether an education service is appropriate and inclusive especially one struggling to achieve UBE.

These four standards are particularly relevant for students with VI. For example, accessibility for students with VI has both geographic and an information dimension. To gain an education the student must be able to attend his or her own local community school rather than having to leave home and culture. Learning materials must also be available in a media that matches the student's sensory learning needs (e.g., braille, large print, audio format). Pagliano and Gillies (2012) identify equal opportunity as to whether or not the student is being treated fairly in comparison with sighted students. Three particular concerns are pertinent here. The first is whether or not there is equality of representation, the second equality of participation and the third equality of outcome. With self-sufficiency, the focus is on ensuring the student with VI is able to independently function within the learning environment and within the community. The fourth standard concentrates on the student with VI achieving the best possible outcomes in order to reach his or her own highest potential. Failure to achieve these standards means that the student will be seriously disadvantaged.

Method

Participants in this study were purposively chosen to provide the widest possible range of information (Denzin & Lincoln, 2008). The five participants with VI were selected employing important stratification criteria (see Table 1 for detail of these stratifications). For example, one of these stratifications is the category of vision impairment, which for this study was identified as a principal criterion. It was expected that the level of vision of the interviewees could be identified using the standard visual acuity of either <6/18 for low vision or <3/60 for blindness. Two other key stratification criteria are gender and geographical region of birth.

Purposive sampling included nominating the specific settings for the research. It was decided to focus on the four geographical regions of PNG where SERCs were situated (Mt. Sion SERC Goroka in Highlands, Callan SERC Rabaul in Island, Callan SERC Wewak in Momase, and St John SERC in Southern). The sites were chosen because the four centres can easily be reached by air and road. The researcher also had prior knowledge of each Centre's history and a personal relationship with the centre and therefore considerable rapport had already been established (Edwards, 2002). Furthermore, each region offered valuable cultural information regarding the personal and professional life of each participant. Additionally, these factors combined to help reduce travelling costs and the amount of time required to conduct the research.

A summary of the relevant demographic data of each of the five participants is provided in Table 1 Participant demographic profile. Each participant has been given a number, a pseudonym (in order to protect the participant's privacy). Also included in the table are details of the participant's gender, category of visual impairment (e.g., either blind or low vision), level of education completed, geographical region of birth, and current employment.

Table 1. Participant demographic profile

No	Pseudonym	Gender	Age	Vis Cat	Education	Religion	Employment
1	Luke	M	19	LV	Gr 10	Island	Home duties
2	Julie	F	23	Blind	Gr 10	Momase	SERC
3	Mary	F	27	Blind	Col Cert	Momase	SERC
4	Moses	M	26	Blind	Diploma	Highland	NDoE
5	Joanne	F	24	Blind	Gr 10	Southern	Home duties

* Cert (certificate), Gr (grade), LV (low vision), NDoE (National Department of Education) SERC (Special Education Resource Centre), Vis Cat (visual category)

Before collecting data, ethics approval was obtained from the James Cook University Human Research Ethics Committee (H3846, 24.8.2010) and permission to conduct the interviews was obtained from the PNG National Department of Education (FRI-1-2, 12.7.2010).

Data were gathered using the semi-structured interviews held face-to-face. This method was chosen because it was thought to best suit the research focus (Denzin & Lincoln, 2008). The questionnaire was developed without fixed wording or fixed ordering of questions. This allowed the respondents to freely share their stories about their social and educational experiences in gaining an education in PNG (Burns, 2000). Questions were shaped by the researcher's 27 years' experience working in PNG as an itinerant/resource teacher for students with special needs, principal, inspector and teacher educator. Information from a recent review of the literature (Aiwa & Pagliano, 2012a) was also used when formulating the questions. As a result, two main themes emerged when developing the questions: the social and educational support provided by SERC teachers and the provision of material resources.

Although there are approximately 860 languages spoken in PNG, the three official languages are English, Tok Pisin (Talk Pidgin), and Motu. The interview was conducted in a language suitable to each participant, which in this study consisted of a mixture of English and Tok Pisin. As the researcher is fluent in both languages, no outside assistance was required. A mixture of English and Tok Pisin was used to interview Julie, Mary, Moses and Joanne whereas Luke preferred to speak Tok Pisin for the entire interview. All "face-to-face encounters between the researcher and informants [were] directed towards understanding the informant's perspectives on their lives, experiences or situations as expressed in their own words" (Bogdan, 1984, p.77).

Each interview was audio-taped and subsequently fully transcribed verbatim. Creswell (2009) points out that before beginning the analysis, it is important to organise and prepare the data. As some parts of the interviews were in Tok Pisin, the first step was to translate the sections of Tok Pisin into English. Although, standards of rigour exist for data collection, analysis, interpretation and reporting of qualitative data (Creswell, 1998), no such standard exists for translation of trans-linguistic qualitative data. However, it is well accepted in research that a translation should be accurate, use natural forms and express all aspects of the meaning that is understandable (Larson, 1991).

When each interview was translated, the analysis involved repeated-reading through the transcripts in order to become familiar with the interview content. The strategy of reading line-by-line was to obtain a general sense of the information as well as to reflect on the overall meaning. Once this overall view of the participants had been gained, meaning was brought to the information through a detailed analysis and coding process. Specific themes emerged as the coding process progressed. For each of the themes, narrative passages were used to draw attention to the responses from the participants. These quotes also added to the "sense of reality" by describing exactly what the participants felt and experienced when gaining an education in the diverse culture of PNG. The final stage of the data analysis concentrated on highlighting the fundamental nature of the experiences of the students within mainstream schools.

Insider Perspectives

As previously stated the researcher has spent time working in PNG as a primary teacher, as a special education teacher and as a special education inspector. This therefore makes me an insider researcher. As an insider, the researcher was in a position to share the language of the respondents and add additional interpretation from personal experiences (Edwards, 2002).

Working in various capacities with children with VI over a 27 year period has provided opportunity for the researcher to gain a wide knowledge of the topic being studied. Edwards (2002) argued that the benefit of insider research is the knowledge of the situation the researcher brings concerning history, culture and an awareness of body language, semiotics and slogan system operating within the cultural norm. These experiences had also developed the groundwork for rapport with all respondents as well as breaking down many potential barriers that could have existed between the participants and researcher. At the same time, the researcher was well aware that even though he has had extensive experiences working with children with VI that does not qualify him as a person with vision impairment. His inside knowledge is therefore limited.

Time is a major factor in the acquisition of trustworthiness. Time spent interviewing the participants and time spent with each participant to build a relationship all contribute to trustworthy data. If the researcher spent a large amount of time with each participant then he or she would be more likely to collect trustworthy data.

Even though in this study, the researcher only spent approximately 60-minutes with each participant, it is important to be aware that the researcher had already established a previous relationship with each of the participants. The interview therefore constituted a culmination of both past and present relationships. For each participant the actual interview presented an extension of an existing relationship. This is because a solid rapport had already been established with the researcher when the students were school students.

As an insider researcher trustworthiness was achieved through contact with professionals who worked in the field with the participants. For example based on prior knowledge of relevant professionals the researcher was able to tell whether behaviours of the participants and what they said were consistent, stable and dependable (Burns, 2000). It is therefore believed that all interviews reported are reliable and secondly the participants view point, thoughts, intentions are accurately reported. The researcher also believes that the interviewees were very frank and comprehensive.

Results

The following provides a brief introduction to each of the five participants. Luke was the only participant who could read large print (low vision). At the time of the interview he was 19 years old and came from the Island region. He lost his sight when he was 3 years old. It was believed that a *masalai* (spirit in Sepik culture) made him blind. Sisters Mary (27) and Julie (23) were both functionally blind and they came from Momase region. The cause of their blindness was thought to be genetic. Their parents died when they were 8 and 4 years old, respectively. They were raised by maternal relatives in the village. Moses (26) originated from the Highlands region. He lost his sight at the age of eight when he was in grade one. He was playing with his friends when one of them threw a sharp stick at his eyes. Joanne (24) came from the Southern region. She was in grade eight when she became blind due to illness.

The terms used by Pagliano and Gillies (2012) to describe an appropriate inclusive education of accessible, equal opportunity, self-sufficiency and best outcomes possible proved to be useful in forming analytic categories and these have been used to report the results.

Theme 1: Accessibility

Accessibility for students with VI has both geographic and an informational dimension. Most of the schools in PNG are located in major towns or population areas, yet many of the country's population live in isolated mountainous rural communities. The ideal is for students with VI to attend their local community school to gain an education. However, this means that learning materials must also be available in a media that matches the student's sensory learning needs (e.g., braille, large print, audio format). During the interviews, the five students shared their experiences regarding the availability of information and their ability to access the school.

Luke who can read large print (low vision) stayed with his parents in the village on the Island to attend primary and secondary school. Luke reported that at primary school "*I was adequately supported with modified learning materials and equipment to enable me to pass the national grade six examinations and continue to secondary*". At secondary school "*they did not consider my impairment … they put me together with others to do [the] same academic work with no accommodation".* His comment regarding access to school was: *"Yeah in regard to travelling, I had no problem travelling to school and back".* However, Luke's comment regarding his parents' attitude towards school was: *"Yes, my parents supported me going to school but [they] are always concern[ed] for [my] safety. They don't allow me to go by myself. They will ensure I go with someone".*

Moses, who was functionally blind left home in the Highlands to receive an education. He attended residential special school prior to mainstream primary and secondary school. During his time at school, he was supported by teachers from the SERC with braille materials. Moses explained that: "*SERC teachers are always supportive … I had all my materials in braille".* He continued: "*I know that things were not in place in terms of resources, materials and facilities… there are always difficulties around and challenges but we still have to pursue, be consistent and be persistent in what we do and carry on with learning"*. When describing his access to education, he said: *"Well, I was lucky to be brought into residential special school in town where I got most of my support. Yeah, I was lucky. If I am in the village I would not go to school"*.

Mary and Julie from the Momase region lived in their village until the Christian Brothers found them. They were sent to special residential school prior to starting their mainstream primary and secondary education. Mary's experience with information was: *"I was kindly supported by [the] SERC and mainstream school staff. The teachers were trained to use braille so I would easily cope with other students".* She described her access to school as: *"I did not do anything in my village. I was there until the Christian Brothers identified me and send me to residential special school"*. Julie described a similar experience with access to information saying: *"no teachers at my local regular school can read and write braille, therefore, they are unable to teach us"*.

Joanne from the Southern region stayed with her parents to attend school. She shared her experience regarding accessibility: *"I find my own way to school because I'm living near the school. It just takes ten minutes to walk from my house"*. Her experience of the accessibility of information was: *"the materials like braille materials were produced and it was on time … the teachers come around to check all the time"*. She described the education for students with VI in PNG with the following words: *Well … some of us are fortunate to stay in cities and major towns to attend school. Others throughout the country did not have a chance to attend school to learn to read and write braille"*.

Apart from Joanne who lost her sight in secondary school, Luke was the only participant who stayed with his parents to attend primary and secondary school in his local community. Even though he resided in his village with his parents and attended his local school, he did face many challenges with his learning. In contrast, the three participants who were functionally blind left their homes, relatives, home language and culture to receive an education. They attended residential special schools prior to going to mainstream primary and secondary. They were supported by teachers from the SERC with the provision of braille leaning materials. Yet, for these participants to receive an education they had to leave their community, their home language and culture. This often resulted in ongoing displacement even after they left school (Aiwa & Pagliano, 2011a).

Theme 2: Equal opportunity

Luke described his experience regarding equal participation in academic activities: "*At secondary they do not help a lot … a few of the teachers try to encourage me but majority take no notice of me*". He went on to give an account of his grade 10 national examination at secondary. "*I did the exam not in large print but it was written in normal print size like all the other exam papers. For those little tiny letters it was printed so small that I cannot see"*. He shared another experience in the classroom situation: *I was put to sit in the front but most of the times, the writing on the board was not clear enough. I tried my best to cope up with it but could not … sometimes I get help from other students*.

Similarly, Moses described a situation at secondary school: The Mathematics teacher told me that I was not going to do the exam because the exam questions have a lot of diagrams. I felt it was not fair for me so I reported the matter to the Principal. The Principal then instructed the Mathematics teacher to give me the test. He described another situation with examinations in braille: "When reading and writing braille it's quite time consuming because you will have to depend on your finger … normally takes more time but for me it's ok but I would suggest not sufficient".

Julie also shared one of her experiences with a Science lesson at secondary: I can remember in my secondary school days … one time we went into the Science lab and the teacher tried to demonstrate to us an activity. He explained to other students in the class and showed them how to use the instruments. He did not explain and describe the instruments to me. I was lost and it was difficult to understand and follow them. Furthermore, Julie described how teachers in mainstream schools organized outdoor activities for students with VI: "Other outdoor activities including physical education, the teachers usually take us out of the field and let us read books".

Mary described her experience with examinations: "I found difficulties with diagrams only where marks were lost. I think the diagrams can be audio recorded so the explanations of the diagrams are recorded and questions can be brailled." She further echoed: "the teachers find it very difficult to explain the diagrams. They don't know how to explain to students with visual problems".

The teachers within the mainstream were challenged to provide an equal opportunity for Luke to be included in all the academic activities. He said: *"It was a real challenge for regular teachers, they just treat all of us the same. They don't allow extra time for me for exam, all of us had the same time"*. Clarke, Keeffe and Thies (1998) point out that with the reduced extent of their visual field many students are unable to read regular print. Therefore, students with low vision often experience significant problems with learning because of the limited amount of vision they have available for them to see both near and distant objects. For the four functionally blind students, there were more opportunities to be included in the mainstream classroom. In the next section, the participants describe their experiences regarding functioning independently in their learning and in their local environment.

Theme 3: Self-sufficiency

Luke described situations regarding social skills: “At school teachers do not allow me to play sports … I see that was a real challenge as all of us are not the same.” He continued: “I am doing matriculation up there but mummy and daddy, they are always concern with safety and do not allow to travel by myself”.

Joanne described her method of attending school in the following manner: “I walked with a guide, a friend who also goes to school there. Somebody on my street takes me there and after school we walked back home together”. She further commented on how she functioned in the learning activities in the following manner: “At high school, I had some students or teachers come around to assist or dictate what was written. I braille them or just write the answers”. She continued: “We had to move from classroom to classroom every forty minutes for different subjects. When we move I had my friends help me carry the braille machine and the other always leading me to move to the next classroom”.

Julie described how she functioned in the class. “When the teacher was writing on the board, my desk mate read the questions to me and I braille them. With assignments, I do them at my own time with friends”. Julie shared her experiences with mobility as: “Most times life is very hard so I have to have a guide to guide me when I going to school, work, banking or shopping and marketing”.

Similarly, Mary’s experience was: “I think a person who is guiding us has to be responsible when we going to school, bank, market and shopping”. Her comment on mobility training for daily social and living skills was: “My teachers actually did not know how to teach orientation and mobility and daily living skills”.

Moses functioned similarly to Julie and Mary. His comment was: “For handouts or notes, I normally ask my desk mate to read to me so I braille them. For test there was restriction so I asked the teacher to read out the questions and I braille the answers”. His experience at university was: “Well, at university it was quite different. Yeah, I do find it very difficult at university but not at primary and secondary”. He further stressed that: “Sometimes it depends very much on how you do your studies. You, as a student, do your studies very carefully and prepare well for the examinations”. He described his support for social skills as” “I got 90% of the support from house parents at special residential school to look after myself”. He continued: “Despite the impairment, I always try my best not to let this impairment overcome me but always pursue with life and I am so interested in going further”.

In regard to self-sufficiency, the aim was to ensure the student with VI is able to function independently within the learning environment and within the local community

(Pagliano & Gillies, 2012). The student with VI is to achieve the best possible outcomes in his or her learning and in social skills in order to reach his or her own highest potential. Failure to achieve these standards means that the student will be seriously disadvantaged. In spite of many opportunities provided for functionally blind students with academic work and access to schools there was mismatch between opportunities and self-sufficiency. Moses was the only participant who was self-sufficient with his learning. In the following section Moses shared his experiences of being self-sufficient and achieving the best possible outcome.

Theme 4: Best possible outcome

Amongst the participants who participated in this research, Moses obtained Diploma in Education from university, which was the highest educational qualification amongst the participants. He explained: "*at tertiary you are independent where you will do things at your own …where you will find or source information yourself*". He commented further on his achievement: "*it's quite hard and emotional to express …very proud of myself, sponsors and lecturers".* In regard to his overseas sponsorship he said: "*he continued to support me until I finished my university study with fees, other expenses and a laptop with JAWS program"*.

There were a number of negative and positive factors involved in reaching this outcome. He left his rural isolated village, culture and relatives to attend a residential special school prior to attending mainstream primary and secondary school. However, his personality and, in particular, his social skills helped him to participate in both the learning and social environments. Critically, he admitted that: *"he secured a sponsorship from … a wealthy benefactor in Australia who paid for all his educational expenses"*.

Findings

This research found that one of the barriers which prevented these five former students with VI attending primary and secondary school, was the geographical location of schools. These are located in the major population centres in the country's four regions: Southern, Highlands, Islands and Momase. Yet, in PNG, much of the population live in isolated mountainous rural communities and students with VI have no access to school. This is because the closest school is often a considerable distance from the child's home and the family have no way for the child to reach the school. Thus three students who were functionally blind had to leave their village, to attend school in the city. Luke, the participant with low vision experienced many challenges gaining access to learning materials in class. Luke therefore was seriously disadvantaged when he was at secondary school and this meant that he has missed out on possible employment since leaving school.

There was evidence from the research data that: "*brailling of textbooks was the main form of modification for functionally blind students*" (Mary, 2010). The data also revealed that students who are functionally blind were identified as having the most extreme needs and therefore were able to access services and receive special education support. In spite of this assistance, the data revealed only one past blind student was able to function independently in his learning and his local environment and has reached his best possible outcome. He was the only participant who progressed to university and graduated with a Diploma. His achievement was due to prerequisite social skills he attained earlier in the intervention program at SERC and secondly the support he received within PNG and overseas with materials, funds and equipment.

Sighted students normally develop social behaviour by observing social events, customs and imitating. Vision impairment often restricts incidental learning through observation and imitating, students with VI often have difficulties demonstrating socially appropriate behaviour (Dummer, Lieberman, Moffett, & Sharprio, 2008). Thus the students were set for failure and social isolation in the classroom and local community. There was further evidence from the data that they did not possess the requisite social skills to participate effectively in the learning activity to reach their highest potential. Yet, Pagliano and Gillies (2012) argue that when students are able to function effectively in the learning environment, they are ready to engage themselves socially.

As well as being able to engage socially, students with VI require the ability to move independently about their environment. However, most homes in PNG are geographically isolated, with a predominately agricultural population living in mountainous rural areas. Therefore, for students with VI to achieve self-sufficiency, it is necessary for teachers to explicitly teach orientation and mobility and skills for daily living and employment. Additionally there is the importance of accessing the expanded core curriculum that uniquely addresses orientation and mobility for all students with VI.

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What is stereotypic behaviour? A brief overview of the research literature

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Abstract

Stereotypic movements are one of the most common forms of problematic behaviour particularly among children who are blind. These repetitive, persistent and pervasive fixed body movements can negatively interfere with the child's development, learning and social inclusion. Given that most children who are blind are included in the regular education system, it is vitally important that educators have current knowledge about stereotypic behaviour in order to consider interventions regarded as best practice.

Introduction

An association has been identified in the research literature between some specific behaviours and certain taxonomic categories of disability (Berkson & Tupa, 2000). One particular association is stereotypic behaviour in children who are blind. Stereotypic behaviour refers to repetitive fixed body movements or the repetitive movements of objects by an individual that are persistent and pervasive (Lowry & Sovner, 1991). This behaviour raises concern when it interferes with learning and the development of socially acceptable behaviour. As these disordered behaviours occur with great frequency in some children who are blind (Gal & Dyck, 2009) it is important to identify strategies to help reduce possible negative consequences. The current policy of inclusion in schools has resulted in the mainstreaming of most children who are blind. As stereotypic behaviour conflicts with the educator's notion of socially acceptable behaviour in inclusive settings, there is an urgent need to identify how best to meet the needs of this group of students so that their learning is enhanced and they do not become socially isolated by and from others.

This revised literature review provides a number of definitions of the behaviour with reference to both functionality and characteristics. The terminology of the disordered behaviour for those students who are blind is presented with reassurances provided that 'blindisms', i.e.: particular mannerisms deemed more prevalent in children who are blind, are not necessarily exclusive to this sector of the population. However, mannerisms such as eye rubbing, eye pressing, eye poking and body rocking are more prevalent in children who are blind (Troster, Brambring, & Beelmann, 1991b) but are not necessarily exhibited solely by these children.

The predominant thinking is that stereotypic behaviour emerges as part of normal development, but when development is blocked by a sensory impairment such as blindness, these repetitive behaviours persist in the child's behavioural repertoire and assume particular functions (Thelen, 1996). The importance of understanding both functional and social dimensions is critical, if prevention and/or intervention are to be considered by educators, given that most children who are blind in developed nations are included in regular settings.

Stereotypic Behaviour – Definition

The term stereotypy (stereotypic behaviour) is used in a variety of disciplines. However, regardless of the discipline, the definitions are remarkably similar. Stereotypic behaviour refers to repetitive body movements or the repetitive movements of objects by an individual. These motor responses are repetitive sequences of fixed behaviours that are persistent and pervasive, according to Lowry and Sovner (1991). They are excessive in rate, amplitude or frequency and are pursued in an invariant manner (American Psychiatric Association, 2000; Schopler, 1995). They are cyclical and rhythmic in nature and may involve vocal sequences together with fixed movement patterns (Berkson, 1983; Daversa, 2001). The behaviours also include non-functional rituals and routines as well as behaviours that display a persistent preoccupation with stimuli (South, Ozonoff, & McMahon, 2005). These definitions suggest that stereotypic behaviours are self-directed actions; they are produced and received by the performer, consciously involving no-one else. Therefore, behaviours that are discordant within social environments in which they occur are typically described as disordered (Kauffman, 1997). Stereotypy is one such disordered behaviour. It is generally only exhibited by children and youth with severe emotional, cognitive and sensory disabilities as found by Willemsen-Swinkels, Buitelaar, Dekker and Van Engeland (1998) and Murdoch (1996). This implies that blindness as a sensory disability is a contributing factor to why and how these behaviours occur.

Many definitions suggest the behaviours have no adaptive function (Baumeister, 1978; Turner, 1999) however this is challenged by authors such as Nijhof, Joha and Pekelharing (1998) who consider the behaviours have a homeostatic function. It is also debated by Carr and Durand (1985) and Durand (1990) who suggest the behaviours have a communicative function and by authors such as Murdoch (1996) and Thelen (1981) who concur that the behaviours are developmentally significant. The behaviours are often defined as a necessary stage of infant development, increasing and declining as part of typical behaviours (Berkson & Tupa, 2000). As maturation occurs, the repetitive behaviours are incorporated into more complex patterns, however when particular mannerisms are retained, they transform from natural movements to pathological stereotypes. This is the behaviour of concern – it is repetitive, rigid, invariant and that which continues inappropriately (Gal, Dyck, & Passmore, 2002).

Stereotypy may be self-injurious or non-injurious self stimulation. Kauffman (1997) identifies dependencies upon the topography, meaning how the behaviour is displayed, the intensity, the rate and the social context of the behaviour. Self stimulatory behaviours that are non-injurious may take one or more of the numerous forms documented in the literature such as body rocking, jumping up and down and hand weaving (Lowry & Sovner, 1991). Self stimulation resulting in atavistic behaviour, that is an intentional infliction of body injury, is most likely to be displayed by individuals with complex needs (Gedeon, 2003). Self-injurious behaviours include striking a body part against a body part, striking a body part against an object, or person and aberrant consumatory behaviour, e.g. self-induced vomiting (Lowry & Sovner, 1991).

Non-injurious and self-injurious self-stimulating behaviours are diverse, complex and challenging. In order to remediate such disordered behaviour, it is necessary to consider the characteristics, functionality and etiological theories of stereotypy.

Characteristics

Stereotypic behaviour can be considered a variation of normal behaviour (Attwood, 1995; Berkson & Tupa, 2000; Kauffman, 1997; Symons, 2000). The behaviours are not homogeneous but vary in onset, timing, form, intensity, frequency and show variability/sensitivity to environmental change (Willemsen-Swinkels et al., 1998). The behaviours are maintained by all or one of the senses, with the assumption being that self-reinforcing, or self-perpetuating sensory feedback occurs. Lovaas, Newsom and Hickman (1987), as well as Lowenfeld (1971), suggest that the behaviours, as operant responses, serve as a block to excessive or aversive environmental stimulation. Zentall and Zentall (1983) together with Miller, Lane, Cermak, Anzalone and Osten (2005), concur that stereotypies act as modulators to maintain an optimal state of arousal, supporting this notion that stereotypic behaviour regulates sensory input from the environment.

Baumeister (1978), Berkson (1983) and Troster et al. (1991b), concur that there are four major characteristics of these movements. These are: 1) a fixed form of structure, repeated within a constant time interval; 2) a typographical invariance of pattern; 3) an invariance of environmental influence; and 4) ‘a lack of any recognisable, adaptive significance’ (Troster et al., 1991b, p. 570). This group of authors also note that these behaviours are not necessarily just movements and include other repetitive behaviours such as smelling, repetitive noises and tongue clicking.

Edelson (1995) theorises that the behaviours may actually release endorphins in the body that provide some form of pleasure. This report also provides examples of stereotypic behaviour in relation to the sense involved. Visual stimulation may involve staring at lights, repetitive blinking, moving hand/objects in front of the eyes and hand flapping. Auditory stimulation may involve ear tapping, finger snapping or vocalisations. Rubbing the skin with hand/objects or scratching may result in tactile stimulation. Excessive rocking; either front to back or side to side, results in vestibular stimulation. Taste may be stimulated by placing objects/body parts in one's mouth, or licking objects. Olfactory senses are stimulated by smelling objects or sniffing people (Edelson, 1995). Stereotypic behaviour can therefore be characterised in a number of ways, however the functionality of the behaviour is perhaps a more complex issue.

Functionality

Functionality and etiological theories cannot be seen in isolation however the literature provides much discussion about the functions of the behaviour while offering various hypotheses to support each perspective. Lourie's seminal paper, first published in 1949, refers to stereotypic behaviour as self-stimulatory, suggesting the behaviours are an attempt to experience movement as part of normal development, the function being expression and release of tension. Lourie states that there are a number of variables in relation to which factors determine the emergence of the behaviour, factors as to whether the behaviour continues and there may also be factors in relation to fluctuations in the level of the behaviour, but stereotypy is essentially self-stimulatory (Lourie, 1949). This early research laid the foundation of much of the future discussions on functionality.

Thirty years later, Eichel's (1979) research discusses the onset of mannerisms in a similar approach to Lowry in that the behaviours are considered to evolve within normal development. Her research explores functionality with reference to the body part involved, whereby it is considered analysis of this type will aid the understanding of the function of the behaviour. Eichel comments that some mannerisms are maintained by unconscious, selective reinforcement and by a lack of stimuli, thereby allowing the behaviour to become self-reinforcing.

Lowry and Sovner (1991) defined functionality further, presenting the notion that stereotypic behaviour has four functions: 1) Socio Environmental Control – the use of problem behaviour to gratify a desired need; 2) Means of Communication – a non-verbal form of conveying discomfort or a need for assistance; 3) Modulation of Physical Discomfort – a direct or indirect reaction to a reduction in comfort levels; and 4) Modulation of Emotional

Discomfort which may cause irritability or over arousal, which is unpleasant, resulting in behaviour that aims to change the discomfort. Guess and Carr (1991) draw functionality and theory together as a three-stage model. This is the theory that behaviours begin as an instinctive, involuntary response. They are used to maintain sensory equilibrium and then used operantly to achieve particular outcomes.

Attwood (1995) offers similar explanations for the functions of the behaviour, defining these as a means of communication, a pleasurable sensation, a response to anxiety, a means of hypnosis, or a movement disorder. Likewise, Weisler, Hanson, Chamberlain and Thompson (1985) summise that the functions of this disordered behaviour appear to relate to a method of control and the related consequences which become highly reinforcing.

Nind and Kellett (2002) refer to functionality in their research, identifying seven groupings. Firstly, that the behaviours are functional, with the functions relating to sensory input. This input could be self-stimulatory or could serve as a homeostatic function, maintaining equilibrium and stimulation levels. Miller et al. (2005) contribute to the suggestion that the movements are adaptive in that they maintain a homeostatic state of stimulation for they consider children who are blind are under stimulated. Secondly, Nind and Kellett (2002) state that the behaviours serve as a discharge function in the form of a tension release, an expression of frustration or anxiety and stress. Communicative function is a third hypothesis in relation to a need for attention, tangible reinforcement, escape, or for sensory stimulation. Much has been written about the fourth category, that the behaviours are learned and are maintained operantly by reinforcers. Contributing further to functionality discussions is the neuro-pathological theory, which links the behaviour to particular conditions or syndromes such as Retts and Fragile X. These endogenous factors may link with environmental factors, which result in the behaviour remaining as part of a child’s repertoire. This supports the perspective of a number of authors that suggests that the behaviours begin as normal development, peak, then decline over time, but display an onset and duration that differs from the norm.

In the absence of appropriate alternative behaviour, these highly reinforcing behaviour excesses are chosen over more socially acceptable behaviour according to early studies by Thurrell and Rice (1970) and more recently by Troster, Brambring and Beelmann (1991a). The behaviour therefore provides access to positive and negative reinforcer functions, and offers stimulation of some kind. Clearly there are multiple functions of stereotypic behaviour, all of which may need to be considered when seeking explanations (Kennedy, Meyer, Knowles, & Shukla, 2000).

Divergent thinking is evident in the research in relation to the functionality of stereotypy. A number of articles on the definition, descriptors and functionality of these mannerisms were reviewed by Eichel (1978). She concludes that there is ‘no systematic way to refer to any specific movement pattern' (p. 20) and that the various theories in relation to etiology are largely speculative. Eichel also writes that further review is necessary of behaviours that are repetitive and that are not directed towards an observable goal, as much of the reported literature is unsound. A differing viewpoint is offered by Thelen (1979, 1981) and Troster et al. (1991a), that these behaviours are transitional. However, Thelen acknowledges that the replacement of these behaviours is considered more difficult when motor development is impeded until more mature behaviours are maintained. Willemsen-Swinkels et al. (1998), refer to the absence of biological explanations when considering the etiology of these seemingly meaningless behaviours. Daversa (2001), in more recent studies, refers to stereotypic behaviour as 'apparently non-functional'. Brambring and Troster (1992), summarise this literature, stating that stereotyped behaviours 'serve no apparent purpose' (Brambring & Troster, 1992, p.105).

Therefore functionality spans the spectrum from behaviour of no apparent purpose to that of maintaining environmental and sensory equilibrium through to behaviours that are so highly reinforcing that they interfere with productive learning. The understanding of functionality of stereotypy has not necessarily been an historical progression of ideas however it is clear that in reviewing the literature, theorists consider that the behaviour offers some form of self-stimulation to the individual.

Examination of Terms Relevant to Children who are blind

Self-stimulatory behaviours are displayed by many children who are blind (Eichel, 1971; Gal & Dyck, 2009; Guess, 1966; Jan, Freeman, McCormick, Scott, Robertson, & Newman, 1983.) They are known to occur with great frequency, so much so that they have been called 'blindisms.' This term lacks specificity, however, by replacing it with stereotypies or mannerisms, the fundamental aspect of the behaviour is clear, i.e., repetitiveness in order to provide a form of stimulation, as espoused by Fazzi, Lanners, Danova, Ferrari-Ginerva, Gheza, Luparia, Balottin and Lanzi (1999).

The use of the word 'blindisms' is contested by a number of authors, suggesting preference to the use of the term 'mannerisms' as the behaviour is not population specific, that is, it is not exclusive to children who are blind (Eichel, 1978; Fazzi et al., 1999). The term 'blindisms' or mannerisms, actually covers a broad range of habitual behavioural patterns. These behaviours may be referred to as challenging behaviour, maladaptive behaviour, problem or ritualistic behaviour, obsessive, self active engagement or self-stimulation (Pagliano, 2001). These differ from developmental stereotypes, which contribute to a child's growth and maturity and are normative and atypical. Berkson and Tupa (2000) consider that there is a 'dependable, curvilinear relationship between age and behaviour' (p.

4). Mannerisms such as these are not normally retained beyond a particular age and do not become aberrant, repetitive behaviour (Symons, 2000).

It is these maladaptive behaviours that have at times been classified for the purpose of research by theorists such as Eichel, Holland and Leonhardt, however the literature reports that this classification process is not straightforward (Symons, 2000).

Description of the Behaviour in Children who are Blind

It is evident that there is an absence of a standardised scale for describing and measuring stereotypic behaviour in children who are blind, although there is currently a range of measurement strategies utilising different definitions in use (Symons, 2000).

Early research on descriptions of these behaviours is described in the literature by Chevigny and Braverman (1950) who provided a general description of manneristic behaviour. This was followed by Blank (1957) who undertook research involving two categories of stereotypic behaviour; firstly, patterns of motility that appeared in the first year of life and were transitory and secondly, behaviours that were fixations or regressions in these patterns. Carroll (1961) offered five categories of mannerisms. These were mannerisms of posture, gait, facial expression, voice and those termed negative. Roy (1967) and Thurrell and Rice (1970) looked at stereotypic behaviours that involved hand and eye movement only. Cutsforth (1968) offered a classification system in relation to three categories. The categories were the degree of vision loss, tactual stimulation, and kinaesthetic stimulation. Stone (1969) also provided a classification system based purely on observation and clinical data required for specific research. This was then followed by Hayman’s work (1972) who suggested four categories of mannerisms which were rocking, odd head movements, eye involved mannerisms and twirling. These early researchers focussed on specific behaviours as opposed to the range of stereotypic behaviours in children who are blind.

However it was Holland (1971) who was the first to attempt to provide a classification system of all behaviours as exhibited by children who are blind based on the literature available at the time. The purpose of this system was to assess and provide guidelines for remediation of the behaviour. Holland’s five categories that mannerisms may evolve from were as follows: (1) Expressions of internal conflicts and insecurities; (2) Accommodations to the environment; (3) Mannerisms through lack of personal awareness or lack of understanding of socially acceptable behaviour; and (4) Childhood fixations – that may develop into; (5) Habit patterns (Holland, 1971).

Expanding on Holland’s Classification System, Eichel (1979) created a Taxonomy of Blindisms as categorised by body part used to perform the mannerism. The purpose of the taxonomy was to assist with systematic observation and in-depth understanding of these behaviours. Utilising the taxonomy of a set of thirty-four descriptors, Eichel's research aimed to validate a number of etiological theories in relation to the mannerisms in children who are blind. In Eichel's words, 'by testing the proposed theories of mannerisms, the effectiveness of remedial techniques may be determined' (p. 168). This research indicated that stereotypy was a learned behaviour and was maintained through various levels of reinforcement. The taxonomy allowed theorists to define the behaviour, the body part affected could be determined, and more socially acceptable behaviour substituted through remediation. The taxonomy, quite significantly, provided the means of identifying the specific mannerisms within the population of children who are blind.

Leonhardt (1990), for the purposes of her research, provided a detailed list of mannerisms involving verbal and motor behaviours that were only present in the population of children who were blind. These were categorised as those that involve light gazing, eye pressing/poking/pulling, movement of the head or an object in front of the eyes using a light source, postural abnormalities and spatial abnormalities.

A number of useful documents have since been utilised in research in this field. These include the 1) Carolina Record of Infant Behaviour (Simeonsson, 1979); 2) Timed Stereotypies Rating Scale (Campbell, 1985); 3) Atypical Rating Scale (Wehmeyer, 1994); 4) The Bielefeld Parent Questionnaire (Brambring, Dobslaw, Klee, Obermann, & Troster, 1987); 5) Achenbach Behaviour Checklists (Achenbach, 1985); 6) The Short Sensory Profile, (McIntosh, Miller, Shyu, & Dunn, 1999); 7) The Stereotyped and Self-Injurious Movement Interview (Gal et al., 2002) and 8) Revised Child Autism Rating Scale (Saemundsen, Magnusson, Smari, & Sigurdardottir, 2003).

A standardised classification system in relation to the characteristics of stereotypic behaviour is yet to be published and likewise, there is no standardised system for determining the frequency levels of stereotypic behaviour in children who are blind.

Frequency in Children who are Blind

High frequency levels of the behaviour are displayed by children who are blind (Brambring & Troster, 1992; Dumont & Markovits, 1982; Eichel, 1971, 1978, 1979; Guess, 1966; Jan et al., 1983; Troster et al., 1991b). It is evident that some stereotypic behaviours are more prevalent than others in this population. Such mannerisms (referred to as oculodigital phenomena) include eye rubbing, eye pressing, or eye poking and the motor stereotypy of rocking (Molloy & Rowe, 2011).

Oculodigital stereotypies are thought to produce phosphenes which are bright patterns of light that provide visual stimulation as reported by Brambring and Troster (1992) and Fazzi et al. (1999). Other researchers concur with this and make particular reference to eye poking which results in an important source of visual stimulation for children who are blind (Brambring & Troster, 1992; Brame, Martin, & Martin, 1998; Jan et al., 1983; Luiselli, Myles, Evans, & Boyce, 1985; Raver & Dwyer, 1986; Thurrell & Rice, 1970; Troster et al., 1991b). However what is particularly of interest is that these oculodigital mannerisms do not emerge from normal behavioural patterns (Jan, Groenveld, & Connolly, 1990). This behaviour, as opposed to other developmental behaviours emerges in the first to third year period of life and does not always decline with maturation but remains at a relatively high level in some children who are blind. Some research suggests that these mannerisms are not displayed with children who have retinal disorders, optic nerve dysfunction, nor those with cortical blindness. However the literature states that there are few other known behaviours that can replace the powerful sensation of ocular stimulation.

The stereotypic behaviour of head and body rocking, is also found to be highly prevalent in children who are blind (Brambring & Troster, 1992; Brame et al., 1998; Dave, 1992; Felps & Devlin, 1988; Jan, Freeman & Scott, 1977a; McHugh & Libermann, 2003; McHugh & Pyfer, 1999; Molloy & Rowe (2011); Shabani, Wilder, & Flood 2001; Transom, 1988; Troster et al., 1991b). Brambring and Troster (1992) suggest that body rocking may create a level of arousal that cannot easily be manifested appropriately when loco-motor development is restricted through blindness. The impact of blindness may affect a number of areas of development (Fazzi, Signorini & Lanners, 2008; Fraiberg, 1977; Sonksen & Dale, 2002) however the absence of an incentive for voluntary motor skills may in turn contribute to an explanation of the prevalence of rocking.

The literature also reports that the prevalence of other mannerisms such as repetitive hand and finger movements and repetitive manipulation of objects are common in children who are blind, especially at an early age. Head shaking and head rolling are also reported to be particularly common in these children. (Jan et al., 1990; Jan et al., 1977b; Salustro & Atwell, 1978; Wolf, 1968). Few studies have been undertaken to explore these particular behaviours but they appear to be evident in this sector of the population (Berkson & Tupa, 2000).

Recent studies undertaken by Molloy and Rowe (2011) aimed to review which behaviours are associated with specific visual conditions and which are associated with the degree of vision loss for an individual. This research also discussed the theories that attempt to explain stereotypic behaviour. These findings link eye pressing to bilateral ocular impairments due usually to retinal disorders, it links eye poking and light gazing to cortical vision impairment, while body rocking is associated to learners with cortical vision impairment and also to those with retinopathy of prematurity. This contradicts the research of Jan et al., (1990). Nevertheless the severity of vision loss appears to influence the type of stereotypic behaviour meaning that blindness may result in body rocking plus head/neck movements, whereas those with minimal vision display oculodigital stereotypies, while those with some usable vision display few stereotypies.

A number of studies on the prevalence of the spectrum of behavioural problems in the total population indicate frequency rates to be 10-15% (Rutter, Graham & Yule, 1970). Studies by Troster et al. (1991b); Jan et al. (1977a); Tirosh, Shnitzer, Davidovitch and Cohen (1998); Fazzi et al.,(1999), discuss the prevalence of specific behavioural problems in the form of stereotypy in children with vision impairment and indicate significantly higher frequency rates than that of the general population. The study by Troster et al. (1991b) indicates rates of up to 100%. The majority of the 85 congenitally children who are blind in their 1991 study exhibited a single stereotypic behaviour hourly, while 25% of children displayed stereotypy on a daily basis. Studies by Jan et al. (1977a), and a follow up study by Tirosh et al. (1998), also with children who are congenitally blind, found 51% displayed problem behaviours in childhood; this figure decreased to 48% by adolescence. Research by Fazzi et al. (1999), again with children who are congenitally blind, found that 73% displayed this disordered behaviour. These examples of research assist to validate the assumption that there is a high frequency rate of the behaviour in children who are blind when compared to the general population.

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Sampling Social Experiences in School: Feasibility of Experience Sampling Methodology on an iPlatform.

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Abstract

This paper reports on a pilot study testing the feasibility of an app as a survey tool for exploring the social experiences of high school students who are vision impaired. The Participation in Everyday Life Survey app was designed for use with the Experience Sampling Method. This method uses in-the-moment surveys to understand individuals' experiences of everyday activities and situations. Pilot testing shows the app to be usable and accessible for people with vision impairments and high school students who are sighted but who have other disabilities. This pilot study has also shown that the Experience Sampling Method has the potential to provide useful insights into the social experiences of high school students who are vision impaired.

Keywords: Experience sampling method, vision impairment

Understanding the social experiences of high school students with vision impairment (that is, those who are blind or have low vision) who are in mainstream schools is vital to parents and educators. Vision impairment causes significant differences in the ways children learn and interact with others. Environmental information, spatial knowledge and non-verbal communication rather than being acquired incidentally, need to be specifically taught (Lewis & Wolffe, 2006). These differences can be challenging both for individuals with vision impairment and for those interacting with them.

School is compulsory during a young person's formative years. Spending five or six hours a day in an environment in which disability is seen often as a “problem” can impact on the experience of school. Indeed, research and anecdotal evidence suggest that school is often perceived as a lonely place for students with vision impairment (Hatlen, 2004; Jessup, Cornell, & Bundy, 2010; Sacks, 2006; West, Houghton, Taylor, & Kia Ling, 2004).

Adolescents with vision impairment may experience particular challenges within the context of social interactions. These stem from difficulty reading visual cues and the need for assistive devices to access print and assist with mobility. As peer relationships become more important in the context of adolescent development, many young people weigh-up the benefits of these devices against the social costs of being seen as “different” and either dispense with, or under-utilise, them (Söderström & Ytterhus, 2010). Adult assistance at high school, including that of teacher aides can also be a social negative. It has been described as akin to being “in mainstream with a chaperone. It’s like going to a party with your parents” (Whitburn & O’Connor, 2011, p.8).

Previous research eliciting the perspectives of young people with vision impairment about their social and educational experiences has used focus groups (Cochrane, Lamoureux, & Keeffe, 2008), face-to-face in-depth interviews (West, et al., 2004; Whitburn & O'Connor, 2011), telephone interviews (Gold, Shaw, & Wolffe, 2010), questionnaires (Hess, 2010), time geographic diaries (Kroksmark & Nordell, 2001) and audio diaries (Worth, 2009). While each of these methods has made a valuable contribution to research, all rely upon retrospection and recollection. None has captured in-the-moment experiences.

A person *experiences*, rather than simply performs, activities and interactions. Experience is a complex phenomenon comprising subjective and objective aspects and differing depending on the length of time since the experience. Researchers use a variety of methods to capture aspects of experience. Recall methods, for example, interview and focus groups can capture both subjective and objective aspects of experiences, after the memories have been processed and thus provide longer term perspectives. In contrast, observation methods may capture the objective aspects of real-time actions and interactions (e.g., what a person is doing). Few methods capture subjective aspects in-the-moment.

Csikszentmihalyi (2000) has developed the Experience Sampling Method (ESM) to collect data about both objective and subjective aspects of experience in-the-moment. In this method participants are signalled at random times throughout a pre-determined period (i.e., several days or a week) and asked to fill out a short survey on their current experience. The ESM is particularly useful for capturing experiences that are often discounted as unimportant in recall diaries (e.g., thinking or doing nothing) and activity in natural environments (Hecktner, Schmidt, & Csikszentmihalyi, 2007).

Researchers using ESM generally target specific groups to learn a great deal about the daily lives of a relatively small sample. Its reliability and validity are well established in adolescents (Hecktner, Schmidt, & Csikszentmihalyi, 2007). Moneta, Schneider, & Csikszentmihalyi (2001) used the ESM to examine self-concept, self-worth and affect across adolescence. The ESM has also been used to measure the quality of everyday life in boys with neuromuscular disorders (Bray, Bundy, Ryan, & North, 2010) and to understand age and gender differences in homework experiences (Kackar, Shumow, Schmidt, & Grzetich, 2011).

Adapting the ESM to measure experience of high school students who are vision impaired meant eliminating reliance on vision to fill out surveys. Palm pilot devices, used in previous studies, e.g. Bray, Bundy, Ryan, & North (2010), rely on vision. ESM essentials are (a) an alerting device and (b) a survey. We wanted a device that would alert participants but not require their responses to be audible, particularly when in public. After consultation with colleagues who are vision impaired, we sought to implement the ESM using iDevices. These are increasingly used by people with vision impairment and are mainstream and so unlikely to have a stigma attached to them (Söderström & Ytterhus, 2010).

We were unable to find an existing survey app that would be available offline and be accessible with screen readers and zoom functions, so we developed the Participation in Everyday Life (P.I.E.L.) Survey app (Jessup, Bian, Chen, & Bundy, 2012), named after a University of Sydney Research group instrumental in its development. Development was a collaborative and iterative process of trial, and feedback involving the development team and colleagues who were vision impaired. The prime requirement was that the app be both accessible and usable by people who are blind or have low vision. Adapted technology products sometimes are technically accessible but not user friendly, frustrating those who want to use them (Söderström & Ytterhus, 2010).

Due to the complexity of designing ESM studies, pilot studies are imperative to trial the equipment and assess response rates, participant burden and survey questions (Hektner et al., 2007). The purpose this pilot study was to (a) examine the accessibility and usability of the survey app for people who are vision impaired; (b) test the processes of taking and using the device at school; and (c) determine whether or not the survey questions would capture useful data about social experiences. Data from the pilot study would allow us to refine the app, the processes and the survey in preparation for a larger study.

Method

The study had approval from the University of Sydney Human Research and Ethics Committee. Informed consent was obtained from both participants and their parents for participants 16 years or younger. Consent, when preferred, was audio, rather than written.

Participants

The number of high school students in Australia who are vision impaired is relatively small (Cochrane, et al., 2008). In order to preserve this group for the future study, we piloted the app with two different groups, each trialling a different aspect.

The first group (see Table1) comprised 3 adults who are vision impaired. They tested the accessibility and usability of the app. The second group (see Table 1) comprised three high school students who have a disability other than vision impairment. This group of young people was chosen as they are more likely to have experienced a greater degree of social isolation and exclusion than their typically developing peers (Díez, 2010; Doubt & McColl, 2003). They tested the processes involved in taking and using a device at school and assisted in refining the survey questions.

Table 1. The Pilot Participants

Participant	Age	Gender	Occupation	Disability	Pilot device used	Prior iDevice exp
1	41	F	Volunteer	Nystagmus, hydrocephalus	iPad /text	Yes, own iPad
2	60	M	Mature age student	Non-arteritic anterior ischemic optic neuropathy	iPod touch/ voiceover	Yes, own iPhone
3	58	F	Retired	Grave's disease	iPad/ voiceover	Yes, own iPad
4	15	F	High school student	Metatropic skeletal dysplasia	iPod touch/ text	Yes, own iPod touch
5	16	M	High school student	Cerebral palsy	iPad / text	Yes, mother's iPad
6	17	M	High school student	Learning difficulties	iPod touch/ text	No

Instruments

Social Experiences Survey. The pilot version of the ESM survey comprised 18 questions. It was designed to elicit information about quality of activities and social interactions and was based on four sources: (1) data from previous research involving young people with vision impairment (Jessup, 2010); (2) literature relating to young people with vision impairment and social experiences (e.g., Cochrane, et al., 2008; Rosenblum, 2000); (3) literature related to school social experiences and students with disabilities (e.g., Curtin & Clarke, 2005; Díez, 2010; Doubt & McColl, 2003; Koster, Nakken, Pijl, & van Houten, 2009); and (4) consultation with service providers for young people who are vision impaired.

Eleven questions related to external (i.e., objective) dimensions of the experience: location, with whom, and how they were interacting. Participants were also asked what they were doing and why, whether it involved joking or mischief or helping and to what extent they knew what was happening around them? Seven questions related to internal (i.e., subjective) dimensions of experience: whether they wished they were with or were doing something else, how dependent they felt, the extent to which they were enjoying themselves, felt lonely, fitted in and felt accepted?

The P.I.E.L. Survey app was downloaded onto university-owned iDevices (iPad, iPod touch). A control file (Jessup, et al., 2012) specifying the study parameters (i.e., the survey questions, alert sound, maximum delay, sampling times) was loaded into the app. The maximum delay (the time between the beginning of the alert sound and when a survey would be marked "unopened" and not able to be filled in) was set at five minutes. Sampling times were scheduled randomly every 2 hours from 7:30am to 9:20pm on weekdays and 8:30am to 10pm on weekends. This random scheduling was to limit anticipation of the surveys. Five of the six pilot participants trialled the first version of the app. The app was being refined concurrent with the pilot study so that Participant 6 trialled the final version.

*Psychological Sense of School Membership***.** The high school students also completed the Psychological Sense of School Membership (PSSM) (Goodenow, 1993), an 18-item questionnaire. The PSSM explores the extent to which students feel like an accepted, respected, and valued member of their school community. This measure has been used with Australian high school students (You, Ritchey, Furlong, Shochet, & Boman, 2011). The PSSM served as a source of external information about the validity of the data collected with our survey.

Procedure

All documents were emailed to participants in advance. Training was given at each participant's venue of choice, usually their home. One of the high school students had his teacher aide present (at her request) so that she could understand what was required of him.

Each participant was offered a choice of device and provided with 30 to 60 minutes of training. Most were familiar with iDevices and only needed to practice responding to the survey. They were informed of the five minute window in which to answer the surveys and given the feedback form that would guide their interview at the end of the sampling period. High school students were also given an information letter for their school so that teachers and administrators would understand that the device was a research tool.

After initial training, the researcher activated the device to start the following day. Participants were asked either to carry their device, or have it in close proximity, for the duration of their sampling period. The sampling period for the adults who were vision impaired was 3 consecutive days. They tested the accessibility and usability of the app. This included the processes involved in plugging in headphones if necessary, answering the survey, carrying and charging the devices. The high school students' sampling period was 4 consecutive days, including one weekend day. They trialled the survey questions and the processes involved in using a device at school.

After the sampling period, the first author collected the device and asked participants if they had problems accessing or using the device or hearing the alert sounds. They were also asked how they managed carrying and charging the device, in what way the survey affected what they were doing and what they thought about its length. Additionally, they were asked if there were questions they found hard to answer and what led them to respond in the way they did. Finally, they were asked their thoughts on being socially included in general. The high school students were also asked about the ease of using the device in class and whether additional information needed to be provided to school staff.

Analysis

Five sources of data were analysed. These included: (1) feedback from the post-sampling interview, (2) signal response rate and survey duration, (3) the face validity of the survey responses, (4) follow-up interviews where relevant, and (5) PSSM scores.

The post-sampling feedback about the usability, accessibility and practicality of the app and iDevice was categorised. Response rate and duration were analysed by examination of survey data uploaded to an Excel file. Signal response rates (the percentage of signals to which each person responded) greater than 70% were considered acceptable. Timestamps were used to calculate response duration (i.e., how long the surveys took to complete). Three minutes or less was considered acceptable. The face validity, the degree of consistency between the survey items and the purpose of the survey (Crist, 2005), was analysed by comparing the logic of participant responses to questions about the internal dimensions of experiences with their responses to objective aspects of their experiences and then comparing both of these with the extant literature. Post-analysis feedback was used to clarify any irregularities in responses. The PSSM score for the each of the high school students was compared with their individual responses to questions about fitting in and acceptance when at school.

Results

Overall the high school students reported that they had enjoyed using the device and contributing to the research. They found it was a “conversation starter.” None had difficulty responding to the device at school although two said it was inconvenient to answer the device if new work was being explained, as they did not want to miss an explanation to respond to the device. All made multiple copies of the information letter so they could provide a copy to a school administrator and also keep one with them. The students believed that the survey content was sufficient for its purpose.

None of the high school students had difficulty carrying, hearing or using the device. The first two students were wheelchair users and kept the devices with them in their chairs. The third student (Participant 6), who used the final version of the app, kept the iPod touch in his pocket and had no trouble hearing the alerts, even in a crowded shopping centre.

Feedback from the three adult participants who had vision impairment was somewhat different. Although none had any difficulty answering the survey questions, Participants 2 and 3 had trouble hearing the alert sounds, particularly in public, and even when they heard the signal, they could not sometimes locate the device before the survey expired. Participant 1 had no trouble hearing the alert but did not always take the iPad with her when she went out to socialise because it was not hers. She went out socialising on two of her three days. She said she that would rather have the app on her own iPad than look after an additional device. In fact, all three adult participants would have preferred to use their own iDevices for the surveys. Participant 2 had not completed many surveys on the final day as he had urgent family responsibilities. Participant 3 said her struggle was to be “mindful of the iPad.” She had to remember to take it with her when she changed rooms or went outside.

Response rates of the high school students were all acceptable (67%, 82%, 96%) but those for all the participants with vision impairment were low (43%, 43%, 57%). Nonetheless, each of these participants with vision impairment reported in the post-survey interview that using the device and filling in surveys was easy. All had given reasons why they could not respond to many of the surveys including: (a) not hearing alert sounds and (b) intentionally, or unintentionally, not having the device in close proximity. All surveys took less than three minutes to complete.

Evidence for the face validity of data collected with the social experiences survey was supported by the context of the responses, for example, the relationships between activities and enjoyment (Figure 1) and interactions and acceptance (Figure 2) and was consistent with extant literature (e.g., Hektner & Csikszentmihalyi, 2002). Data from the high school students illustrates these relationships. Figure 1 illustrates what the young people were doing when alerted and how much they were enjoying themselves. The response options were: “heaps,” “a lot,” “a little,” or “not” enjoying themselves. Figure 1 shows that not all activities are enjoyed equally all the time. For example, at times, when doing schoolwork, the students responded “not” to enjoyment and at other times, responded “heaps” to the same question. These responses suggest that the young people tailored their responses to their situation, rather than provide a rote set of answers for each survey.

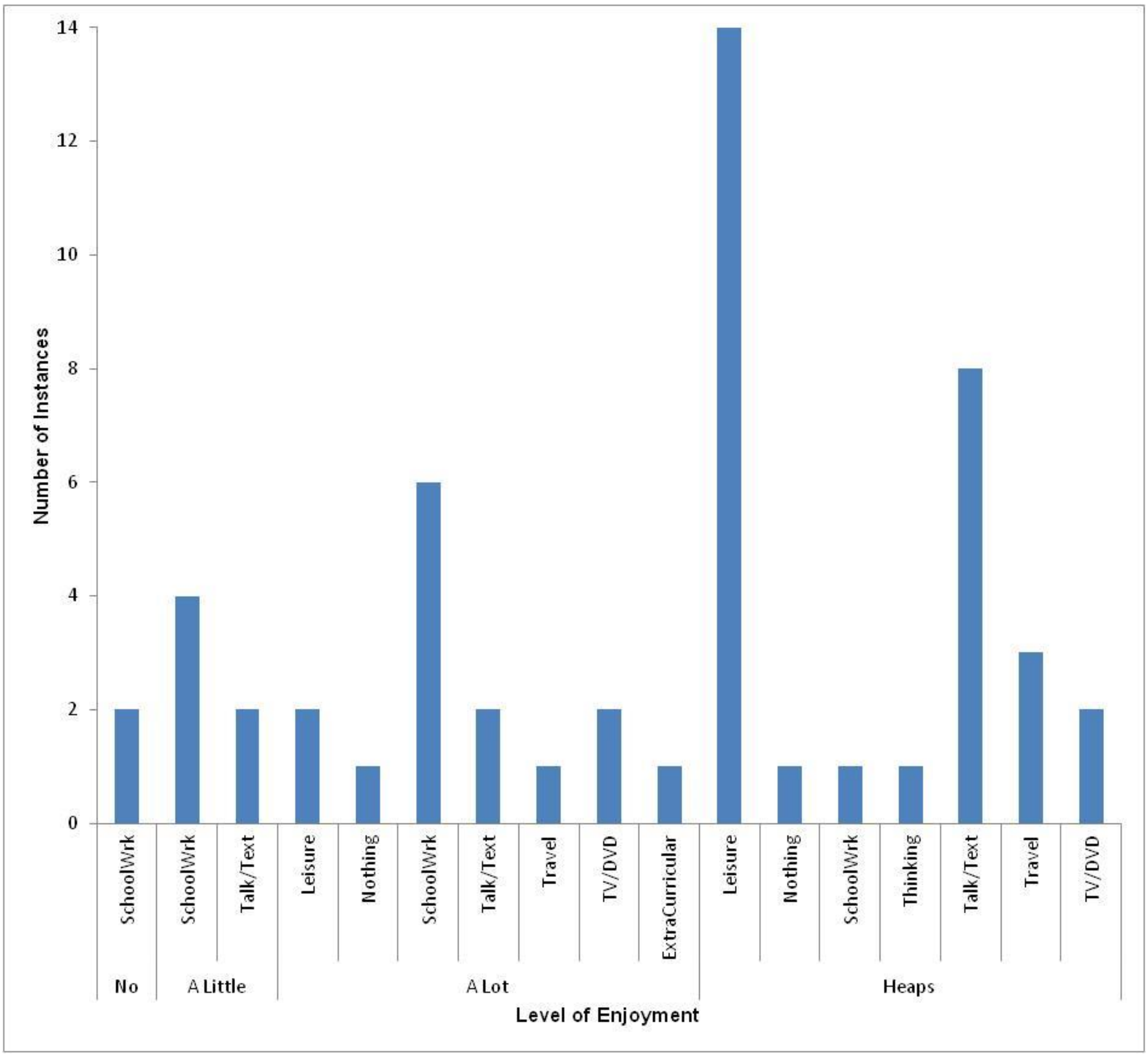

Figure 1. Activities and enjoyment.

The horizontal axes show what high school students were doing when alerted and their enjoyment level. The vertical axis shows the number of instances of this activity over 4 days.

Figure 2 illustrates the relationship between interactions and acceptance. The young people felt “heaps” or “a lot” accepted by the people with whom they were interacting. This included their interactions with school staff and classmates.

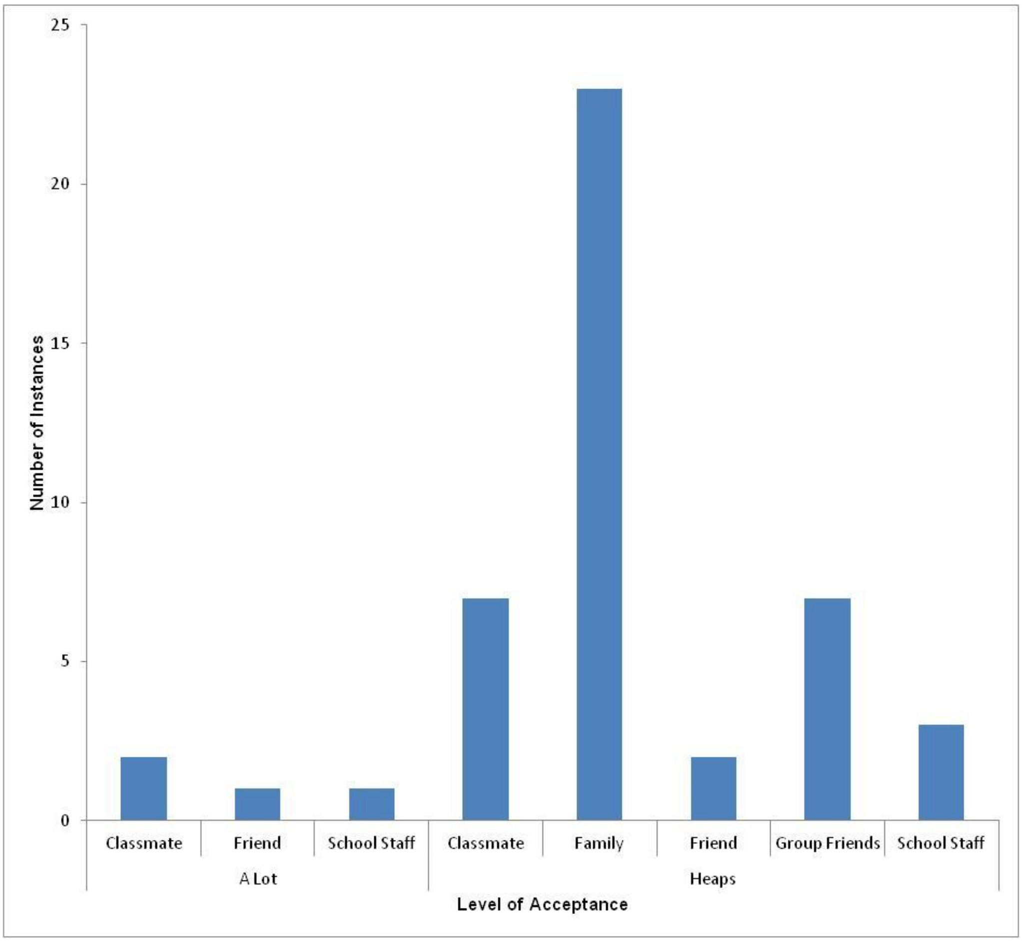

Figure 2. Interactions and acceptance.
The horizontal axes show with whom the high school students were interacting when alerted and how accepted they felt. The vertical axis shows the number of interactions over 4 days.

Post-analysis feedback focussed on clarifying the reasons for the poor response rates of the participants who were vision impaired and clarifying some irregularities in the response logic of one of the high school students (Participant 5). The participants who were vision impaired were asked to provide suggestions for increasing the response rates. All three said the alert sounds needed to be easier to hear and Participant 3 again spoke of her struggle to be “mindful” of the device. She tried to remember to take it with her but would put it down and then go to another room and forget to attend to it. She said that she commonly puts things down and forgets where she’s put them, “any of life’s distractions could take your mind away.” Participant 5, who has cerebral palsy, explained that he had selected the wrong answers a couple of times, once during class and once at home. Although he knew he could go back and redo his answers (the app has provision for this), he chose not to because of the extra time and effort this would require.

The PSSM scores for the high school students indicated that, to a large extent, they felt accepted, respected, and valued at school. Their scores aligned with their high or very high feelings of acceptance (see Figure 2) and perceptions of fitting in at school and provided support for the content of the social experiences survey.

Discussion

The study aim was to test the feasibility of using the P.I.E.L. Survey app to collect ESM data with high school students who are vision impaired and to determine whether or not the survey questions captured useful data about social experiences. Results showed that the app was usable and accessible once the survey was opened, but the poor response rate for participants with vision impairment in comparison to those of the high school students indicated there were issues that clearly needed to be addressed. These issues were hearing the signal; and carrying, and being mindful of, an additional device that may not be immediately visible or at hand.

An alert sound can be a location cue for people with vision impairment who may not be able to visually scan a room to locate an object. However, when the sound stops, so does the cue. Locating the device may take extra time, which has implications for the time allowed for the maximum delay. Hearing an alert sound may present an additional challenge for voiceover users if they are already focussed (with headphones) on auditory output from another device.

Mindfulness of iPads in particular, was an issue. Unlike smaller devices, they have to be carried as they do not fit into a pocket. Providing a backpack so an iPad is worn, rather than carried and set down, may be one option to help mindfulness. The two adults who used iPads declined to use the offered backpack. Both already owned iPads so had to be mindful of two devices. In the future study, the high school students may choose to keep their iDevices in their school backpacks during the day.

As a result of this pilot, modifications were made to the P.I.E.L. Survey app and control file settings. The alert sounds were lengthened and in some cases made slightly louder. Their default volume is a compromise between being loud enough to be heard outside or in a noisy area and not being too loud in enclosed or quiet spaces like classrooms. Volume can be adjusted via the device where necessary. Additionally, the app was made available via the Apple Store so participants can download it onto their own devices. This should help reduce the burden of caring for, and having to be mindful of, an additional device. It may also mean that voiceover users, when wearing headphones and attending to their own device, can hear the survey alert sound.

The window of time between an alert sound and the survey being unable to be opened has been lengthened. However, to capture in-the-moment data, there needs to be a limit on how long a survey remains viable. If the maximum delay is too long, the data tend towards being recall, rather than in-the-moment.

The social experiences survey seemed to capture useful information as illustrated, for example, by Figures 1 and 2. The utility of the survey in school settings was supported by the students' above-average PSSM scores that aligned with their high perceptions of acceptance and fitting in in this environment. The PSSM provides an overall measure of a student's perceptions of belonging and acceptance at school (Goodenow, 1993). The social experiences survey has the potential to complement this measure by detailing the experiences contributing to these perceptions.

Conclusion

This pilot study has shown that the P.I.E.L. Survey App loaded onto an iDevice provides an accessible and usable data collection tool for the ESM. In so doing, it has the potential to provide essential information about the everyday experiences of high school students who are vision impaired and be an additional means through which these young people can actively participate in research. A greater understanding of these young people's experiences will enable service providers and educators to develop more targeted social and educational strategies.

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Reports

International Council for Education of People with Visual Impairment (ICEVI)

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The International Council for Education of People with Visual Impairment (ICEVI) is an international association of individuals and organisations concerned with education of children and youth with vision impairment. ICEVI shares with SPEVI the goal of promoting equality of access for all children and families to high quality, affordable and relevant education services and programs. At the global level and within its seven world regions, ICEVI works closely with United Nations (UN) agencies, the World Health Organization (WHO), the World Blind Union (WBU) international development organisations, and government and non-government providers of education, health and rehabilitation services for children and adults with a disability.

ICEVI in the Pacific

With the start of a new ICEVI quadrennium in 2013, and with my acceptance of the position of ICEVI Vice President, several leadership changes have taken place in the ICEVI Pacific Committee. The position of Chairperson was accepted by Paul Manning at the 2012 ICEVI General Assembly in Bangkok Thailand. However, Paul has stepped down from the position due to poor health, and the Committee has nominated James Aiwa to replace Pau for the remainder of the quadrennial period. James brings to the position of Chairperson a wealth of knowledge and experience in education of children with vision impairment in Papua New Guinea (PNG). He is currently finalising his educational doctorate with James Cook University in Townsville, Queensland and in early 2013, commenced employment as a lecturer at Goroka University in the Eastern Highlands of PNG.

The ICEVI Pacific Committee held its 2013 Annual General Meeting via teleconference in June 2013. The meeting included discussion of EFA-VI activities in the Region and confirmation of the following committee members:

- Core committee: James Aiwa (Chairperson), Tricia d’Apice (Secretary) and David Rice (Public Officer)
- General committee (in alphabetical order): Ben Clare, Tim Crowe-Mai, Mereoni Daveta, Barbara Farouk, Frances Gentle, Jill Keeffe, Arnold Koima, Karen Laing,

Setareki Macanawai, Paul Manning, Laisiasa Merumeru, Kevin Murfitt, Paul Pagliano, Maria Stevens and Cathy West

As the Immediate Past Chairperson of ICEVI Pacific, I will support James Aiwa as he settles into his new roles and responsibilities as Pacific Chairperson.

EFA-VI global campaign

In its 2011 Annual Report, ICEVI reported that 69 million children of primary school-age are marginalised from education. This includes 16 million children with a disability, of whom four million (25%) have a vision impairment (ICEVI, 2012). ICEVI members are particularly concerned about low school participation rates in developing countries, where nine out of ten children with blindness or low vision do not attend school. In 2006, ICEVI and the World Blind Union (WBU) launched the "Education for All Children with Vision Impairment" (EFA-VI) global campaign across the several global regions, including the Pacific region. The campaign addresses the UN Millennium Development Goals (MDGs) of universal primary education, gender equality, and global partnerships for development. The campaign's four success measures are (i) increased enrolment rates, (ii) reduced dropout rates, (iii) improved child and family access to support services, and (iv) educational achievement on par with non-disabled peers. As of June 2012, the EFA-VI campaign is being implemented in 13 focus countries across ICEVI's seven global regions. In the Pacific region, the two focus countries are Fiji and Papua New Guinea, with EFA-VI activities also taking place at the regional level.

Regional EFA-VI Forums

ICEVI has collaborated with AusAID, SPEVI and other regional disability organisations to provide Pacific EFA-VI Forums in Sydney (January'11) and Auckland (January'13). The Forums coincided with the SPEVI biennial conferences and brought together education, health and rehabilitation leaders and practitioners from 11 Pacific Island countries. , with to explore The Forums included development of the Pacific Education Development Framework, Vision Impairment (PEDF-VI) 2011-2015, which details the educational priorities in each of the Pacific Island countries.

Fiji EFA-VI Campaign

ICEVI is committed to continuing its support of Fijian families and organisations promoting education for children with vision impairment, including those with additional disabilities. ICEVI has collaborated with AusAID and RIDBC to provide Fiji-based training and support for approximately 35 government and non-government professionals working in the fields of education, health and rehabilitation. Topics addressed to date have included anatomy and development of vision, common eye diseases, vision screening for babies and young children, family-centred and play-based approaches to early intervention and education, inclusive curriculum and teaching methods, emergent braille literacy, and resource making using local materials.

Papua New Guinea EFA-VI campaign

Papua New Guinea (PNG) is the second Pacific Island country identified by ICEVI for implementation of the EFA-VI campaign is Papua New Guinea (PNG). The ICEVI Pacific Committee has engaged in preliminary planning with the PNG National Department of Education (NDoE) and Callan Services for Disabled Persons to host an EFA-VI Forum for key PNG stakeholders, and to establish a PNG National EFA-VI Task Force.

Kiribati EFA-VI support

The ICEVI Pacific Committee is pleased to support the work of AusAID volunteer, Ann Clark during 2012-13. This support has included provision of financial and technical assistance to the Kiribati School and Centre for Children with Special Needs in their establishment of a braille production unit. ICEVI assisted the school with the purchase a braille embosser and the donation of a second-hand brailler through WBU Asia-Pacific’s equipment recycling initiative, managed by the Royal Society for the Blind, South Australia (RSB SA). The braille production unit has been well-received by teachers, parents and students, and braille literacy and music training for students, teachers and families is underway.

Timor-Leste EFA-VI support

During 2012, ICEVI worked in partnership with the Royal Australasian College of Surgeons (RACS) and the Royal Institute for Deaf and Blind Children (RIDBC) in promoting education for children with blindness and low vision in the sub-district of Same (pronounced *sarm-eh*), situated in the mountainous Manufahi District. The goals of the Timor project were (a) to review the success of the rehabilitation partnership between RACS and the local non-government organisation, *Fundusuan Fuan Nabilan Ba Matan Aat*; and (b) to deliver a six-day teacher training program in braille literacy and numeracy and inclusive education for 25 educators from five primary schools in Same. The project highlighted the need for substantial investment in human, financial and physical infrastructure by government and international development agencies to supplement and support existing services provided by Fuan Nabilan for children and youth with vision impairments and their families/carers.

ICEVI international activities

ICEVI-WBU General Assemblies and related events

ICEVI and World Blind Union jointly hosted their General Assemblies and related events in Bangkok Thailand in November 2012. The event's theme of "achieving our vision through empowerment and partnerships" was reflected in the participation of over 1000 people from 120 countries. The program included the WBU Diversity Forum, WBU General Assembly, ICEVI General Assembly, ICEVI-WBU meetings, plenary and parallel sessions and workshops, and Technology Exhibition. ICEVI's Principal Officers for the 2013-2016 quadrennium were elected during the General Assembly. They are as follows:

- President: Lord Low of Dalston, email colin.low@rnib.org.uk
- First Vice-President: Lucia Piccione, email lpiccione@arnet.com.ar
- Second Vice-President: Frances Gentle, email frances.gentle@ridbc.org.au
- Treasurer: Nandini Rawal, email bpaicevid1@sancharnet.in
- Principal Officer: Praveena Sukhraj, email psukhraj@justice.gov.za
- President Emeritus: Lawrence Campbell, email larry.icevi@gmail.com

Vision Alliance and Post 2015 framework

Since establishment of the "*Vision Alliance'* in late 2009 by ICEVI, WBU and IAPB (International Agency for the Prevention of Blindness), the three global organisations have been collaborating at national, regional and international levels to promote the rights of persons with vision impairment, including those with additional disabilities. The Vision Alliance will enable greater exchange of information between the three organisations and identification of common areas of mutual concern that can be addressed through joint advocacy.

Post 2015 Development Framework

ICEVI is working closely with its Vision Alliance partners in promoting the inclusion of people with disabilities in development of the United Nations Post 2015 Development Framework. The Framework will replace the UN Millennium Development Goals (MDGs) that will be concluded in 2015. ICEVI and other international development organisations have expressed their concern that people with disabilities were not included in the original formulation of the MDGs in 2000. As a result, the MDGs do not include disability-inclusive goals and targets or reporting requirements. This limitation has hampered the MDG outcomes reaching the world's poorest and most marginalised people. It was highlighted at the UN General Assembly high-level meeting on disability and development in September 2013, that the estimated 1 billion people worldwide who live with disabilities are still excluded from equitable access to resources such as education, employment, healthcare and social and legal support systems (United Nations Enable, 2013). ICEVI and its international partner members are contributing to the Post 2015 consultation process to help ensure the Post 2015 development framework includes goals and targets that directly address the human rights of people with vision impairment and other disabilities.

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United Nations Enable. (2013). *High-level meeting of the General Assembly on disability and development, 23 September 2013*. Available from http://www.un.org/disabilities/default.asp?id=1590

SPEVI website, List and Blog

Phia Damsma

Sonokids Australia, and
SPEVI Access Coordinator, Web and List administrator

SPEVI website

The SPEVI website at www.spevi.net has proven to be a valuable medium with regard to the SPEVI Biennial Conference that was held in Auckland in January 2013. The website was used to publish the conference flyer, Call for Papers, registration forms, speaker and sponsor information, and the final conference program. All documents were uploaded in accessible formats.

The SPEVI website now shows as number one in Google search for ‘spevi’, whereas previously an unrelated business took first position. Website visitor numbers are up. The majority of visitors are from Australia and New Zealand, followed by the US, Italy, UK and India. Conference related webpages proved to be popular, as was the Resources section (previously called ‘Links’).

Members-only website competition

It is well worth being a member of SPEVI. If you are not yet a member, then you should consider registering now. As a member, you support SPEVI and all that we stand for as an association. You also benefit from a discounted conference registration fee and you can take part in “members-only” competitions with great prizes to be won. Recent Competition prizes were:

- Copy of the book *Visual Impairment in Children due to Damage to the Brain*, by G.N. Dutton and M. Bax (2010)
- CD from the *Simply Listen and Play* series;
- Copy of *Experiencing literacy: A parents' guide for fostering early literacy development of children with visual impairments*, by C. Holbrook (2005);
- Copy of *The Multisensory Handbook - A guide for children and adults with sensory learning disabilities*, by P. Pagliano (2012).

The entries for these competitions, judged by a panel of experts, result in valuable teaching ideas that are added to our website’s Resources section. A special website competition, organised by the New Zealand SPEVI Conference Committee, went “Middle Earth” with a Hobbit Quiz. At the SPEVI 2013 Conference, incoming SPEVI president Tim

Crowe-Mai was announced as the winner, having submitted his (correct) answers within a record time after publication of the quiz on the website.

SPEVI List

The SPEVI mailing list also supported the SPEVI conference, helping to distribute conference materials. In this sense the List and the website perfectly complement each other. We appreciated the efforts of the NZ Conference Committee in ensuring that all circulated conference documents were in an accessible format.

There has been overall growth in the number of people subscribed to the SPEVI List. Also, Tim Crowe-Mai and I, as List co-administrators, are pleased to see that more people have started to post their own messages and that SPEVI Councillors use the List to announce special events. Anybody may join the List by sending a request via email to webmaster@spevi.net. You will then be invited to join. Once you have been registered, you can receive messages and post to the List, using the email address with which you registered.

SPEVI Blog

The SPEVI blog is published on the SPEVI website, and can be accessed at http://blog.spevi.net. In August 2012 Chrissie Butler, handed over the SPEVI blog editorial baton to BLENNZ ICT facilitator Karen Gilligan. We'd like to thank Chrissie for her involvement. Karen immediately showed her great commitment, lodging a large number of Blogposts before, during and after the SPEVI NZ Conference. We wish Steve Bellamy all the best and thank him for his contribution. Finally, we are very pleased to announce that we have recently welcomed a new team member to the SPEVI Blog: Jodie Hoger, Teacher Consultant (Vision), Equity Services, Illawarra Institute. With Karen and Jodie on board, the Blog is in very good hands.

Blogposts are always welcome. You all have interesting stories to share, so make use of the great opportunity to get published! Please contact Karen or Jodie, or email your blogpost to Karen.Gilligan@Blennz.school.nz

The Australian childhood vision impairment register

Sue Silveira

Research Fellow, RIDBC Renwick Centre, Royal institute for Deaf and Blind Children/University of Newcastle

The Australian Childhood Vision Impairment Register (ACVIR) is the first register of its kind and collects unique data on children with vision impairment who live in Australia. ACVIR is hosted by the Royal Institute for Deaf and Blind Children and is supported by many organizations such as Guide Dogs, Vision Australia, Cando4kids, Senses Foundation, Department of Education, Catholic Education and Independent schools across Australia, public eye clinics and private ophthalmic practices. Parents/guardians are invited to register their child with vision impairment and if they agree, the child's ophthalmologist is also contacted to provide data on the child, their eye condition/s and their vision. The information from the family and the ophthalmologist can then present a profile of the child.

To date there are 930 children registered and this allows for detailed analysis of the data, so the true picture of childhood vision impairment can be conveyed. The type of information that is now known includes the following:

- There are about the same number of boys registered as there are girls, and 96% of children have been born in Australia.
- The most common diagnosis is cortical vision impairment and these children tend to have fairly severe vision impairment and other conditions such as cerebral palsy and epilepsy.
- The second most common diagnosis is ocularcutaneous albinism and these children tend to have mild vision impairment and few other associated health issues.
- About 11% of children registered with ACVIR have been born preterm and of low birth weight. The two common eye conditions in children born preterm are cortical vision impairment and retinopathy of prematurity.
- A relationship is emerging between severe vision impairment and the likelihood that a child will also have a severe developmental delay. These children are also likely to have some type of physical disability and hearing loss.

Families are welcome to consider registering their child. They can contact AVCIR staff on (02) 9872 0303 or by email: contactus@vifamilynetwork.org.au. They can register their child using the website which supports ACVIR called the VI Family Network, located at:

www.vifamilynetwork.org.au. This website also has useful resources, links to low vision agencies and advertises events which families may be interested in.

Thank you to the many members of SPEVI who have told families about ACVIR, and passed on materials which have led to families registering their children. The numbers on ACVIR now permit accurate representation when data is requested for service planning and provision.

Vision Australia Children's Services

Denise Pellow

Senior Project Manager - Independent Living Services, Vision Australia

Vision Australia Children Services

Vision Australia has committed to improving the services and supports we provide for all children and their families in line with best practice and Government direction. There are four main goals to our service

- **Equity –** we want to ensure that all children and families receive the best level of service we can provide in relation to their level of need, to help them meet their individual needs and goals wherever they live.
- **Access -** we want to provide all children and families who come to us for support with access to the entire range of vision-related specialist children's services' expertise.
- **Efficiency –** we need to be more efficient, work within our resources and work sustainably so we can ensure the existence of these important supports and services into the future
- **Consistency –** we want all children and families to have the same quality experience with Vision Australia Children's Services and for our strong belief in family-centred and person-centred practice to be clear across all our regions and offices.

Philosophy

Our aim is to ensure that all our specialist supports are delivered within the following important principles:

- All children should be considered as part of their family unit, and understanding the strengths of families helps us to be relevant to their needs
- The family is at the centre of all decision-making regarding the supports its members receive from us and their needs and aspirations drive our involvement with them
- Providing support in a child and family's natural environment supports families in promoting their children's development, learning, and participation in family and community life and focuses on function and socialisation (with an indirect benefit of raising awareness of disability, empathy and promoting friendships)
- Transdisciplinary: Key Workers provide a single point of contact for families, coordinate their service delivery and work with the broader children's services team

to ensure all children and families have access to the widest range of expertise possible.

Our Services

All clients are provided with a level of service determined by their need for our specialist support. The main criteria for determining a level of need will be the child's level of vision, but there will be a range of other considerations that the State Practice Leaders may use to decide on a level of support, where appropriate. There are three State Practice Leaders – one in each state – and these staff members have backgrounds in service delivery. They will contact families soon after those families present to Vision Australia, to discuss their initial needs.

Some clients and families will receive a less frequent service than they are currently getting and some will receive more, but all supports will be designed to meet the goals and aspirations of each family. Vision Australia's services such as Orientation and Mobility, Feelix Library, Orthoptists and Low Vision Clinics and Adaptive Technology Consultancy and training will be available to children and families in addition to Vision Australia's Specialist Children's Services.

For further information or if you have any questions please contact Manager, Children Services or the State Practice Leader in your state/territory on 1300 84 74 66 or via email.

- **Manager, Children Services:** Tracy Larsen White, Email: Tracy.LarsenWhite@visionaustralia.org
- **Queensland:** Amanda Bacon, Email: amanda.bacon@visionaustralia.org
- **New South Wales and Australia Capital Territory:** Lauren Rapley, Ph: (02) 8525 9013, Email: lauren.rapley@visionaustralia.org
- **Victoria**: Geraldine Ryan, Ph: (03) 5249 2701, Email: geraldine.ryan@visionaustralia.org

Children's Orientation & Mobility Services

Vision Australia (VA) employs many Orientation & Mobility (O&M) Specialists with extensive experience in providing O&M programs and services to children, their families and other people who are engaged in the child's development. Vision Australia's O&M Specialists can begin working with the child and their family as early as when the child is beginning to move. Early O&M intervention is based around working with families and significant others who play a critical role in the child beginning to develop essential O&M and other life skills.

In consultation with family, specialist teachers and other VA Children’s Services staff, the O&M Specialist develops and implements programs tailored to meet each child’s individual needs. Programs are specifically designed to develop skills that enhance the safety, independence and confidence of a child who is blind or who has low vision.

For further information contact Nicola Misso, National Manager, Orientation & Mobility
Email: Nicola.Misso@visionaustralia.org

To make a referral to any O&M Children Service, call 1300 84 74 66 or email info@visionaustralia.org

Statewide Vision Resource Centre (SVRC)

Debra Lewis

Manager, SVRC, Department of Education and Early childhood Development, Victoria

The Statewide Vision Resource Centre was the fortunate recipient of the *More Support for Students with Disabilities National Partnership* funding which was earmarked to provide access technology for students with vision impairment. This two-year funding concludes at the end of 2013. Staff of the SVRC convened a working party, which included Visiting Teachers from each region, to determine the access technology priorities for students in Victorian government schools.

Technologies such as the BrailleNote, JAWS, ZoomText, SmartView Graduate and 360, OpenBook with Pearl camera, an array of hand-held electronic magnifiers and around 200 iPads have now been deployed to students around the state. These items remain the property of the SVRC and are available on loan to students where they are found to be useful.

An important component of the funding was teacher training. The SVRC has conducted many group and individual training sessions on these technologies and is currently developing a number of videos which can be viewed via YouTube. One such video is “Getting Started with Duxbury Translator” developed and produced by Lea Nagel and Cam Phillips. For more information about the MSSD National Partnership including links to some handy training videos and cheat sheets, visit: http://www.svrc.vic.edu.au/Anational_partnership.shtml.

In conjunction with partner organisation RIDBC Renwick Centre, the SVRC has continued to offer an excellent “Masterclass program” featuring some of the leading international educators in the field of vision impairment including Frances Mary d'Andrea, Dr Jane Erin, Cay Holbrooke, Ike Presley and Dr Karen Wolffe.

Another highlight for us all, but in particular for the SVRC braille production staff, was the results achieved last year by a Victorian brailling student. Studying subjects which included Mathematics and Physics at Year 12 level, this student achieved a ranking in the top 2% of the state!

Ozzie Dots – a program to introduce contracted braille and tactual graphicacy to beginning braille readers – is now available for purchase. It comprises over 200 original books which introduce the braille code in a sequential manner via stories, recipes, history, geography, rhyme and humour! All books are illustrated with tactual pictures and diagrams. The program is supplied on a CD – editing can easily be undertaken to personalize the program for each student. For more information visit: http://www.svrc.vic.edu.au/CUozzie.shtml

The second ever touch tour of selected works at the National Gallery of Victoria was organised by SVRC Art teacher, Michael Donnelly. The group was treated to an audio-described opera of *Puss in Boots* at the Arts Centre Melbourne. To cap off a brilliant day, staff of one of our partner organisations, Guide Dogs Victoria, arranged for a Flinders Street Station platform and train to be made available for a thorough exploration by the students! For information and photos visit: http://www.svrc.vic.edu.au/EPbigarts2013.shtml

Stay in touch with developments in the field of vision impairment through The Bulletin which comes out fortnightly during term time – send us an email if you'd like notification of each new issue or visit: http://www.svrc.vic.edu.au/Abulletin.shtml

Round Table on Information Access for People with Print Disabilities

Neil Jarvis
President

Round Table on Information Access for people with Print Disabilities is about just that: an umbrella organisation which brings together anyone interested in advancing the cause of accessible information in Australia and New Zealand.

We currently have approximately 40 members, ranging from public library organisations, through the education sector, to several blindness agencies and a number of small commercial organisations. Our vision is that all information is equitably and equally available to all people at the same time and the same cost as the published versions.

We have six specific objectives which are so important to us we placed them in our constitution. They require us to:

1. Foster a spirit of cooperation and resource sharing among members,
2. Set standards,
3. Improve the range, quality and accessibility of materials produced,
4. Provide for industry consultation and/or action on matters of common concern with respect to accessible information,
5. Represent the collective views of members to appropriate bodies, and
6. Foster consumer consultation

All our activities are guided by these objectives in one way or another.

This is a time of change for all of us, and Round Table is no exception to this rule. We have been taking a close look at our organisation in recent times to ensure that we remain as relevant in the years to come as we believe we have been since our formation in 1981. The Executive Committee has therefore spent a good deal of time updating the organisation's official policies, documentation and position statements, and last year we embarked on the major task of updating all our guidelines on a rolling basis.

We believe our guideline documents are one of the main ways we add value to the discussions in Australia and New Zealand about accessible information. They are used as effective standards by many other organisations in both countries.

We have just completed the new edition of our “Sound Advice Guidelines”, which assists anyone wishing to make information available in an audio format. We will soon do the same with “Guidelines from accessible e-text to accessible print”.

In May 2013, we held a successful annual conference in Sydney. The conferences are a great way for member organisations and individuals interested in accessible information to get together, get to know one another and take part in discussions on any aspect of this subject. It is a great way to hear about innovations in the field via presentations from people who have already started down a road which others might be interested in following.

Conferences provide a great opportunity to recognise individuals in the community who have made an outstanding contribution to the promotion of accessible information. We call this our “Lifetime Achievement Award”. This year, we were delighted to give this award to Frances Gentle of the Royal Institute for Deaf and Blind Children. As her nominees said, she has contributed to this sector for nearly 30 years through the development of educational programs for people with vision impairment in Australia, East Asia and the Pacific Region. In her capacity as a Lecturer and researcher in vision impairment and through her work as a teacher, she has focused on the use of braille as an effective educational, communication and information access tool – underlining its importance as a key to literacy for people who are blind. Nobody deserves this award more than Frances does.

We urge any organisation interested in increasing accessible information to join us. If you would like to know more you can contact our President, Neil Jarvis at: njarvis@rnzfb.org.nz, or our Administration Officer Tammy Axelsen at: admin@printdisability.org]

News from Sonokids: Play and Learn with Ballyland

Phia Damsma

Sonokids Australia

Sonokids Ballyland™ is a fun and educational computer program for all children, including children with special needs. The design specifically supports playful learning by children who are blind or have low vision and/or have additional disabilities.

Ballyland's "Any Key Goes" enables children to explore the computer's tactile QWERTY keyboard safely and independently, with engaging sounds, images, stories and songs. The skills that are developed can be the building blocks for future use of technology, including potential transition to using a touch screen ('virtual') keyboard. Five Key Games introduce one important key at a time (Escape, Enter, Spacebar, Left and Right Arrow keys), with all other keys disabled.

Ballyland offers a range of optional accessibility features, such as:

- No literacy skills required
- No assistive technology required
- Self-voicing
- Speech support
- Audio-based gameplay (option to use headset)
- Zoom
- Unique collection of easy recognisable sounds and images
- Adjustable colour contrast
- Adjustable response time
- Key Games can be accessed with single switch.

Educators and parents who tried out Ballyland's limited Beta test edition, confirmed the great learning outcomes for vision impaired children playing with Ballyland, including those with additional learning disabilities. Ballyland was developed with the support of RIDBC.

Sonokids, a not-for-profit organisation, aims to have as many children as possible benefit from playful learning in Ballyland. An individual user's license costs only 49 AUD. Recently a request was put forward by Hellen Riley, Member of SPEVI Committee of Management. Helen was visiting the Santi-Jintana School for the Blind in Den Chai, Thailand, where Julie Preedy of SASVI, also a SPEVI member, had been working for four months. Sonokids has agreed to support the students of this school with a free Ballyland license.

Visit www.ballyland.com for more information, to download a free limited trial, or to purchase this unique program. For questions, please contact Phia Damsma via email: support@sonokids.org

Tributes and Special Recognition

In Memoriam

Ian Cooper

After a long battle with emphysema, Ian died at home with family around him on Friday 20 July 2012. Many will know Ian as one of the instigators of the National Braille Music Camp, first held in 1986. Head of Music and long-time teacher at Frensham Girls School for 40 years, Ian arranged for the camps to be held at Frensham in the Southern Highlands of New South Wales which was a perfect setting with good quality music facilities, boarding houses and catering.

Ian was also a wonderful composer, arranging music for well-known groups such as The Song Company and also writing songs and instrumental music. Ian has been an inspiration to many of us over the years, also supporting and advising young musicians as they forge their own careers. Ian will be missed, however his legacy lives on in the music he composed and the passion he instilled in the musicians he taught.

Jordie Howell, Vision Australia

Mrs Maureen Davenport

Maureen Davenport passed away on Thursday 3rd January 2013. Her funeral was held at St Paschal Baylon Church, Wavell Heights, Queensland. A dear friend to so many, and a lover of braille. Many years of devotion to supporting other people who are blind and vision impaired. The Australian Braille Authority also benefitted greatly from her tireless support, and all round common sense.

Maureen was the driving force behind the Nundah and City Support Groups for people who are blind and vision impaired. She was the recipient of a Vision Australia Making a Difference award and a long time BCA supporter.

Australian Braille Authority Queensland and Vision Australia

Mr John W Wilson

The passing of Mr John W Wilson, AM, on January 28, 2013. A Thanksgiving Service was held at the Beaumaris Baptist Church, Melbourne. For more than three decades John was at the helm of the Association for the Blind (AFTB) in Melbourne, which became Vision Australia Foundation in 1999 and was one of the four organisations to merge to form Vision Australia in 2004. John joined AFTB as company secretary in 1953 and retired as executive director in 1984. His concerted and considerable efforts during 32 years of leadership brought major transformation and innovation, modernising the organisation’s business practises and bringing in government funding to facilitate consistency and extension of service delivery.

John was also a prominent Australian contributor to the international blindness movement and was made a life member of the World Council for the Welfare of the Blind, now the World Blind Union. His life is an inspiring example of the difference the efforts of one person can make for many others.

Vision Australia

Anne Bourke (1954-2013)

It is with great sadness that I advise that Anne Bourke, one of our Transcribers who worked at Vision Australia, Enfield NSW from 2000 to 2009, passed away on Saturday 9 March 2013. In the past few years, Anne has suffered from Motor Neurone Disease. She was 59. Here in the Vision Australia Transcription Department we remember Anne as a happy-go-lucky person who was generous with her time and friendship. We offer our condolences to her family.

Peter Le, Vision Australia

Aroha Daniels (New Zealand)

Aroha Daniels passed away on the evening of Monday 15 April 2013. Aroha went to the Royal New Zealand Foundation for the Blind's school at Parnell, then on to Epsom Girls' Grammar School and to the Transcription Department at the Foundation. She was a big contributor to the music life at the Foundation and was an excellent braillist and proofreader specialising in music and maths. She has been unwell for several years following a stroke. My earliest memory of Aroha was in the 1957 influenza crisis when she stepped in to be our teacher for a day or so. She was very kind.

Mary Schnackenberg, New Zealand

Di Porrill

It is with great sadness that I pass on the news of the death of Di Porrill on Monday morning - 22 July 2013. Di had been battling cancer for over a year. Di was determined to fight until the very end and her strength and optimism during her illness was inspiring. Di will be sadly missed as a teacher, mentor, colleague and friend.

Nicole Donaldson, Education Queensland

Associate Professor Hector Maclean

MB, ChB St A and DO Lond. FRCS Edin., FRANZCO FRCOphth.

We mourn the passing of our wonderful friend and colleague, Hector Maclean.

Scottish by birth, he came to Australia in 1973 and made Melbourne his home. Professor Maclean worked at the Royal Victorian Eye and Ear Hospital, retiring from clinical practice in 2010 due to ill health.

Professor Maclean had three passions in life: music, working with children, and eye health. During the 1970s Professor Maclean contributed to the establishment of the Educational Vision Assessment Clinic, a clinic at which students' eligibility for additional educational support due to their vision impairment is determined.

He enjoyed the challenge of assessing profoundly disabled students and developed a testing procedure based on Smarties and hundreds-and-thousands for students who were unable to respond to traditional tests.

Professor Maclean was always a generous teacher, contributing regularly to professional development programs in Victoria and beyond. We are all privileged to have known Professor Maclean who was a wonderful friend and support to the Statewide Vision Resource Centre and to the children and families with whom he worked.

Deb Lewis, on behalf of the staff of the Statewide Vision Resource Centre , Victoria

Dr Lilli Nielsen

When Dr. Lilli Nielsen died last month, the fields of blindness, deafblindness, and the education of children with multiple disabilities lost a great friend and teacher. Dr. Nielsen was born in Denmark in 1926, and worked as a preschool teacher, a psychologist, and a teacher of the blind. She wrote numerous books on the development of children who are blind, and was perhaps best known for her work on Active Learning. She grew up with four siblings who were blind and she maintained that this influenced her approach to people who are blind, especially in being respectful of hands and not grabbing them or making them touch things.

Tribute drawn from the "Paths to Literacy" website,
http://www.pathstoliteracy.org/lilli-nielsen-and-active-learning,
Texas School for the Blind and Perkins School for the Blind

Acknowledgement: The JSPEVI Editors wish to thank Leona Holloway of Vision Australia for her support in providing several of the tributes for this issue of JSPEVI.

SPEVI Life Members

SPEVI members welcomed three new SPEVI Life Members, Paul Pagliano, Sue Spooner and Jane Wells at 2013 Annual Meeting in Auckland New Zealand. SPEVI as a professional association is enriched through their efforts and contributions over many years. Paul Pagliano's links with SPEVI go back to the early days of the Australian and New Zealand Association of Teachers of the Visually Handicapped (ANZATVH), which existed from 1970-1981. Presented below is an overview of Paul's qualifications, positions and professional activities.

Paul Pagliano

Academic, School of Education, James Cook University, Townsville, Australia

Current positions

Associate Professor
Director Academic & Accreditations
Chair School of Education Teaching & Learning Committee
Coordinator Master of Guidance & Counselling and the Graduate Certificate of Career Development
Associate Editor International Journal of Disability, Development & Education

Qualifications

DipTeach Primary & Sp Ed Mt Gravatt CAE (Griffith) 1973;
Braille Proficiency Cert ANZATVH (SPEVI) 1973
BEdSt UQ 1976
DipANZAEVH Blind & Partially Sighted, ECE & Adolescence (SPEVI) 1978
ADPA BCAE (QUT) 1982
MEdSt UQ 1985
PhD JCU 1994

Employment history

Teacher, students with vision impairment - Education Queensland. Roles: resource teacher, class teacher, advisory visiting teacher, teacher librarian, teacher-in-charge 1974-1986
Academic, James Cook University 1986-2013

SPEVI

Member 1974 ANZATVH, 1986 ANZAEVH, 2001 SPEVI 2013 (39 years)

Presented papers at biennial conferences: ANZAEVH 86, 88, 93, 95, 97, 99, SPEVI 01, 03, 05, 07, 09, 11, 13 (13)
Treasurer ANZAEVH 1984-1986
Editor ANZAEVH Conference Proceedings 1986
SPEVI representative on ICEVI 2001-2004
Counsellor ANZAEVH 1986-1992
President SPEVI 2009-2013
Vice-President 2013
Member Editorial Board Journal of the South Pacific Educators in Vision Impairment 2000-2013

Member Australian Braille Authority 1984
Member Roundtable on Production of Materials for the Print Handicapped 1981-5
Member Editorial Board British Journal of Visual Impairment 2006-2013
Peer review Journal of Visual Impairment and Blindness
Peer review AER Insight: Research and practice in visual impairment and blindness

Currently supervising 8 doctoral students (2 in vision impairment)
Supervised 7 doctoral students to completion; Examiner of 12 PhD's (8 in vision impairment)

Books
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Pagliano, P. (Ed.). (1986). Current trends in the dducation of the visually handicapped: Proceedings of the Australian and New Zealand Association of Educators of the Visually Handicapped Biennial Conference. Brisbane, Australia: ANZAEVH.

ICEVI
Pagliano, P. J. (2002, 2nd August). Keynote address. International Council for Education of People with Visual Impairment, 11th World Conference "New visions: Moving toward an inclusive community". Noordwijkerhout, The Netherlands.

Retirement

Jane Wells

Principal, Blind and Low Vision Education Network NZ (BLENNZ)

Contributed by Karen Wells, Jude Shelly and Janny Cook, BLENNZ

Jane Wells began her career working with children and young people who are blind and low vision in 1979 when she took on the position of coaching students after school at Homai College. Thirty four years later she has retired after a rich and rewarding career in this specialist area of education, a career which spanned most of her working life. It has included working in the Resource Room at Manurewa High School, then as National Advisor, Manager Itinerant Services based at Homai Campus. More recently Jane was appointed to the position of Senior Manager Assessment and Teaching prior to her appointment as Principal of BLENNZ in 2009.

Jane has outstanding leadership skills and an ability to ‘walk the talk’. Her quiet and gracious manner combined with a sense of humour and her strength of purpose and vision, have set her apart as an exemplary leader with the ability to ‘keep calm and carry on’ as a legendary trademark!

Jane’s enormous contribution to blind and low vision education as a teacher, advisor, manager, principal, make over specialist, long serving and valued active association member of SPEVI and NZATVI, treasurer, convenor speaker, writer, advocate, mentor, colleague and friend has been extraordinary and in recognition was presented with a Life Membership of SPEVI at the 2013 Auckland SPEVI Conference.

Retirement

Mike Steer, AM

Senior Lecturer, RIDBC Renwick Centre, Royal Institute for Deaf and Blind Children & Conjoint Lecturer, University of Newcastle, NSW

Contributed by Frances Gentle, RIDBC Renwick Centre/University of Newcastle

Dr Mike Steer retired from his position as Senior Lecturer with RIDBC Renwick Centre and University of Newcastle at the end of 2012. During his 15 years at RIDBC, he undertook academic research and delivered a broad range of post-graduate and continuing professional education courses in the fields of inclusive and special education, sensory impairment, deafblindness and multiple disability. Mike’s retirement brings to a close a career in education that spans over 55 years since his graduation from Exeter University UK with a Diploma of Teaching in 1957. Past appointments have included Director of the NSW Office on Disability, Principal Advisor, Disability Policy, Government of Victoria; Director, Integration Unit, Ministry of Education (Victoria) and Adjunct Professor in the Faculty of Health & Behavioural Sciences, Deakin University, Principal Consultant & Director of Special Education, Government of Newfoundland & Labrador, Canada, Principal, Psychoeducational Teaching Laboratory, Syracuse University, USA, and Principal, Montreal Association School for the Blind.

During his busy career, Mike found time to complete tertiary study in Canada, North America and Australia. Mike’s professional qualifications include a Ph.D. (Special Education Administration) Syracuse University, and Masters degrees in Public Policy (M.A. (Hons), Melbourne), Vision Impairment (M.Ed., Boston College) and Education (M.Sc., Southern Illinois), BA (Sir George Williams, Montreal), Dip Educ and Teacher’s Certificate, University of Exeter, UK).. Until recently, Mike was Editor of the Australian Deaf-Blind Council (ADBC) *Beacon,* Co-Editor of the *International Journal of Orientation & Mobility* (IJOM), Convening Editor of the *Journal of the South Pacific Educators in Vision Impairment* (JSPEVI), Australian Correspondent of *Deaf Blind International Review*, and Editorial Consultant of the *Australasian Journal of Special Education.*

Mike continues to be a valued and much-loved leader in the field of education and disability and contributes to SPEVI and ICEVI activities on a regular basis. As a SPEVI Life Member, we hope he continues to stay in touch through the SPEVI conferences, journal, Blog and email list.

In the drawing room with Tim Crowe-Mai, SPEVI President

Tim Crowe-Mai was unanimously elected as SPEVI Australia's new President at the SPEVI Biennial Conference in Auckland New Zealand in January 2013. Tim is the Vision Support Program Coordinator at Charles Campbell College (employed by the South Australian School for Vision Impaired) in South Australia and supports high school students with a moderate to severe vision impairment. Tim has a Bachelor's degree from Flinders University with Honours in English, and a Graduate Diploma in Education from the University of Adelaide, majoring in English. He has been working in the field of sensory disability since 1999. Frances Gentle took the opportunity to ask Tim a few questions about himself and his ideas for SPEVI that could be shared with SPEVI members and readers of JSPEVI.

What do you do when not being "presidential"?

Hmmm... not being presidential.... well that does take up quite a bit of time what with trying to bring about peace in the Middle East and all ... wait, that is another president's role. When I am not busy with the SPEVI President activities and outside of work I enjoy reading, cooking and catching up with friends.

What drew you to the field of vision impairment?

Purely by chance actually as so many events seem to occur. When I left university as a high school English teacher I couldn't get a suitable job so ended up working in a school's out-of-hours care program. The school also hosted a hearing impairment centre for students with moderate to severe hearing impairments. I learned Auslan so as to communicate with these students and in 1999 started working at Townsend House (now CanDo4Kids) in their recreation programs for students with a sensory disability. Through this experience I secured a position at the Royal Society for the Blind of SA (RSB) in 2001 as the Child and Youth Liaison Officer and then as the Low Vision Centre Coordinator for 9 years. I was in the fortunate position of being able to divide my time between many areas assisting people of all ages with a vision impairment. I decided during 2011 to explore the possibility of returning to my original vocation as a teacher but in a new field from that I was trained in. I was fortunate to be employed as an Advisory Teacher by the South Australian School for Vision Impaired (SASVI) in 2012. So I have had a rather circuitous route into the field of education but have been very fortunate to gain other knowledge and experiences within the field of vision impairment in the interim.

How did you first get involved with SPEVI?

As part of my initial RSB role I became a member of SPEVI. I particularly started to get involved with SPEVI in 2005 when the newsletter editorship came to South Australia. I became a SPEVI Councillor for South Australia and assisted with the publication of *SPEVI News* for the next four years. In 2007, I became a member of the SPEVI conference organising committee for the Adelaide conference and became Secretary of the SPEVI Committee of Management in 2009.

What do you bring to this position of SPEVI President?

A flair for the dramatic ... no, not really. Simply put I try to work as hard and do the best that I can with whatever I undertake. My firm belief is that the more I put into SPEVI the more I receive in return. So while I am a little daunted to say the least with the role of President, I am looking forward to the work ahead and intend to do my very best.

What are your "passions" in the field of vision impairment?

To do what I can so that every student has the best possible chance to maximise their talents and abilities in order to achieve their goals when they leave school. Personally I enjoy the challenge of learning new skills and ideas to assist students wherever possible. I also feel very fortunate to work in a field with such a committed group of professionals who share their knowledge and experience freely. As a result I want to contribute to the field in any way possible.

What is your vision for SPEVI over the next 2 years?

I would like to see the spirit of SPEVI that is so evident at every conference remain strong and energetic. SPEVI is tremendously fortunate to have such a unique conference. I have heard more than one overseas speaker comment on how good it is...praise from Caesar(s) indeed given the number of conferences that some speakers would attend on an annual basis. SPEVI members are very lucky to be able to enjoy such a wonderful experience every two years. We need to encourage more people to become members and to add their knowledge, passion and energy to the Association. On a practical level I would like SPEVI to continue providing information to members via our brilliant website, advocacy where needed, working even more closely with the South Pacific countries and ensuring that SPEVI continues to be financially viable.

If you could change three things about SPEVI, what would they be?

- More members sending information to the SPEVI List
- More members sending information to the SPEVI List
- More members sending information to the SPEVI List

As I stated at the SPEVI Conference in New Zealand, if every SPEVI member sent one email a year to the SPEVI List, think of all the useful information that could be shared amongst members. Thank you to those who do so regularly and for the rest of us (I include myself in this) don’t be shy…

Do you have any specific projects you hope to complete while in the role of SPEVI President?

I hope to show that being on the SPEVI Committee of Management in any capacity is a rewarding experience and that people will be clamouring for the role of President in 2015. With this in mind a handbook is presently being created which outlines SPEVI's mission statement and role description for the various office bearers so that people are aware that the results are very positive. I plan to assist with the review and update of the SPEVI Principles and Standards and would encourage people to participate. Once completed I would like to see the principles and standards actively promulgated to relevant government departments and other organisations. I would like to explore working more closely with ICEVI given that we share the same aims in wanting to assist teachers and students in the South Pacific and to help these countries as and where possible. Finally I would like to see SPEVI be more active as an advocate for school staff and students.

JSPEVI Editor makes good

In April 2012, the University of Newcastle at an impressive ceremony held at Newcastle's City Hall awarded JSPEVI's Editor its prestigious Alumni Award for Regional Leadership, in recognition of her educational development work in the Asia-Pacific. The Award citation read as follows:

> University of Newcastle Alumnus, Dr Frances Gentle, has combined her two passions to work in the education and disability fields for almost 30 years. Dr Gentle is an academic at the Royal Institute for Deaf and Blind Children's Renwick Centre. Her roles include coordinating and lecturing postgraduate courses in the field of sensory impairment, and researching current issues relating to the education of children with vision impairment. Dr Gentle holds a BA and Dip.Ed. from Macquarie University, a B.Spec.Ed. from the University of New England, a Masters of Special Education (Sensory Disability) with honours from the University of Newcastle, and a Doctor of Philosophy, also from Newcastle.

Since 1990 Dr Gentle has taught students of all levels in mainstream and special needs schools. She established an English language program at the Tokyo International Learning Centre and Vocational Development Centre for the Blind in Tokyo, and spent 11 years at Sydney's St Edmunds School for Students with Vision Impairment and Other Special Needs. Regularly featured in the media for her expertise and her work, among Dr Gentle's many accolades is the 2006 Minister's Award for Outstanding Contribution to Literacy and Numeracy in NSW. In addition, our national Round Table on Information Access for People with Print Disability presented her with its Lifetime Achievement Award and the Zonta Club of Hornsby/Ku-ring-gai with its 2013 Woman of Achievement Award .

Dr Gentle is Vice President of the International Council for the Education of People with Visual Impairment and is involved in a range of professional associations including the Australian Braille Authority, the South Pacific Educators in Vision Impairment and the Journal of South Pacific Educators in Vision Impairment. She also holds a conjoint position with the University of Newcastle.

Queens Birthday Honours 2013

Contributed by Leona Holloway, Vision Australia

Three people have been recognised in the 2013 Queen’s Birthday Honours for their contribution in the area of blindness and low vision. Dr Gabi Hollows was awarded an AO for her leadership of the Fred Hollows Foundation, continuing her late husband’s campaign for the eradication of blindness in Australia’s indigenous community and in developing countries. Kerry McGuire was awarded an OAM for his 60 plus years in administration of blind sports, particularly in lawn bowls. Karen Knight, Vision Australia’s Queensland State Manager for Independent Living Services, was awarded an OAM for her many years of support for her peers with vision loss to reactivate active and satisfying lives.

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