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Role of the SPEVI Journal

The 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.

The Editorial Committee intends the Journal 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, orientation and mobility (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.

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

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SPEVI Journal Subscription and Membership

SPEVI membership is open to educators, professionals and parent groups supporting children and adults with vision impairments. This Journal is provided free of charge and is available on the SPEVI website: <https://www.spevi.net/jspevi/>

Membership information and forms are available on the SPEVI website: <https://www.spevi.net/join/>

Call for Articles

Original manuscripts, reports and news items are sought for the refereed and non-refereed sections of the next issue of JSPEVI. 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,
- descriptions, reviews or evaluations of innovative instructional curricula, programs, or models of education for persons who are blind or vision impaired, and
- letters to the Editor

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.

Guidelines for Contributors

Manuscripts that are of a scholarly nature should be submitted electronically, with the content subdivided into the following two files:

File 1 Author information

Authors must submit a separate file containing (a) the manuscript title, (b) author or authors' name, professional title/status and organisational affiliation of authors, and (c), preferred contact details (address, email, fax, telephone) for the principal author (or co-author) who will be handling correspondence.

File 2 Manuscript

Manuscript presentation: Manuscripts should be submitted in Arial 11-point font, double line spaced, with left aligned paragraphs, 2.54cm page margins (normal margin setting) and numbered pages. A running title header should be included on each page (with no authorship information included).

Size limit: The preferred size limit for scholarly manuscripts is 5000 words or less. The preferred size of agency reports is one A4 page of single line text.

Abstract: Academic manuscripts should include an abstract of 120 words or less, giving a brief summary of the overall content. The abstract may be followed by a list of key words.

Figures and tables: Numbered figures and tables should be included in the manuscript. Tables should be created using a table function, and figures submitted in Black and White, with consideration to the readability of the figure when reduced for publication.

Referencing guidelines: Citations and references included in manuscripts should conform in style to the American Psychological Association (APA). APA guidelines are available on the Griffith University website:

<https://www.griffith.edu.au/library/study/referencing/apa-7>

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Compliance with ethics requirements: For manuscripts reporting original research studies, authors are responsible for ensuring that the reported research has been

conducted in an ethical and responsible manner, with full compliance with all ethical requirements and legislation. This includes adherence to privacy and confidentiality guidelines regarding publication of participant information, including de-identification of participants' information and data. Authors must confirm in the manuscript that written consent has been obtained prior to publication if participant information is included. Where such a person is deceased, authors are responsible for securing written consent of the deceased person's family or estate. Authors are encouraged to consult the Australian Government National Health and Medical Research Council's **National Statement on Ethical Conduct in Human Research (2007) – Updated 2018**, see <https://www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018>

Manuscript review process: Manuscripts will be acknowledged upon receipt. Following preliminary editorial review, articles will be sent to members of the Editorial Advisory Panel and where warranted, to consulting reviewers who have particular expertise in the subject. This journal uses the “blind review” system. Reviewer feedback will be sent to the author/s with an invitation to revise the manuscript content and/or respond to the reviewers' comments. The review process may sometimes take up to three to four months. 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). Authors will be advised in writing if their manuscripts are not accepted for publication.

Manuscript submission: Please forward your contributions for the next edition to JSPEVI to the Convening Editor, Dr Bronwen Scott, Email: bronscott@iinet.net.au.

Editorial

Welcome to JSPEVI's fourteenth volume. I am thrilled to be able to include such a large number of articles in this edition, and sincerely thank all those who have contributed to this issue. I am particularly pleased that we have contributions from across the region – Australia, New Zealand, and Vietnam, as well as a paper from the United States.

Our first paper from Elaine Gilmour explores how specialist teachers in New Zealand can adopt culturally responsive pedagogy to ensure that Maori culture is respected and connected to learning and curriculum. Her article includes an exploration of the BLENNZ Charter strategic goals, as well as a comprehensive glossary of Maori terms.

This edition of our regional journal comes as we continue to adjust to the challenges and changes to our professional practice as a result of the COVID-19 pandemic. We have two papers addressing this issue. Katie Ericson and Belinda Rudinger explore the challenges of distance learning for teachers of students with vision impairments (TVIs) in the United States, providing two case study examples that demonstrate the importance of developing strong partnerships with parents, and argue for the early implementation of a wide range of assistive technology. In our own region, Melissa Cain, Melissa Fanshawe and Polly Goodwin report on the first stage of a research project supported by a SPEVI grant, which explores the barriers to learning for students with blindness and low vision in Australia. New Zealand and Small Island Developing States (SIDS) in the Pacific region during COVID-19 This qualitative study presents some initial findings, some of which support the previous paper from Ericson and Rudinger. It will be interesting to follow the next stage of this important research.

The development of social skills is an area we are all connected with, and Aasha Shaw presents a comprehensive literature review that specifically looks at what are the barriers, challenges and limitations to the development of social interaction skills for students who are blind or have low vision. Her recommendation that research is needed into how a more sociological/holistic approach can be applied to the acquisition of social interaction skills is an important one. Shaw's paper also contains some substantial Appendices which are a valuable starting point for those who wish to investigate this issue further.

Our paper from Thanh Trinh Thi Thu describes a project for the development of tactile books for children with vision impairment in Vietnam. The article explains how to make a progressive range of books which focus on the enjoyment of reading, as well as exposing children to increasingly more difficult concepts. As an avid reader myself, I really enjoyed following the progress of the book making process, and the

importance of children having books that are grounded in their own cultural experiences.

Also on the tactile theme, Leona Holloway, Kate Stephens and Ramona Mandy provide a very interesting update on 3D printing. They have been working in this space for several years and provide three principles for introducing 3D models in the classroom. Additionally there is a template form that can be used as a prompt when 3D printed models are being introduced to support the curriculum.

Domenica Maloney, Melissa Fanshawe, Alexandra Boys and Lauren Terhes present an evaluation of the LEAP Up program implemented by Vision Australia in 2020. This program is designed to support students who are preparing for tertiary study. The development of assistive technology skills again emerges as an important component of tertiary preparation, with the study finding young people require more skills in this area. Accessibility of tertiary institutions, in both the online and physical forms, are still challenging, and there are a range of skills including orientation and mobility and independent living skills that students identified as requiring of more real life experiences to build their confidence. This paper report the findings of a pilot program and it will be interesting to follow this program in the future.

Our final two papers present more personal and reflective approaches to the work we engage in with students who are blind or have low vision. Karen Croake discusses the challenges and successes involved in developing a professional learning community (PLC) when faced with the challenge of working as a Specialist Vision Support Teacher for a kindergarten student. Jessica Caine and Nancy Higgins present a qualitative study exploring Caine's use of reflective journaling whilst expanding her role as an O&M specialist in New Zealand to include working in the early childhood space. Incorporating adult learning theory, Caine explores how using reflective practices helped her connect her personal and professional experience to her work in the early childhood space. This paper also includes substantial Appendices outlining the depth and breadth of reading that Caine reviewed whilst undertaking the reflective process.

So there is much to read and absorb in this edition! There are also a range of reports to keep you up to date with activities through the region. The journal is available in an open-access digital format on the SPEVI website, so please share widely. Many thanks to our contributors, our peer reviewers, and to the JSPEVI Editorial Committee and Advisory Panel for their assistance in putting together this edition. I would also like to sincerely thank Lena Karam for her time and assistance in ensuring the Journal is correctly formatted and accessible.

Dr Bronwen Scott

Editor

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Presidents' Message



Clockwise from top left: **Sharon Duncan, Phia Damsma, Frances Gentle**

It gives us great pleasure to write this message for the 14th Volume of JSPEVI. As 2021 draws to a close, we are reminded of the continuing global prevalence of COVID-19, with the ever-present threat of infections and lockdowns by governments. At such times, rapid transitions from schools and early learning centres to home-based learning are implemented, with parents and caregivers taking on responsibility for their children's engagement with online learning.

Throughout the past 12 months of the pandemic, SPEVI members have partnered with education leaders, teachers, families, and other professionals to ensure that students with vision impairment (VI) continue to actively engage in education. SPEVI has responded creatively to the "New Normal" of COVID-19, taking advantage of inclusive digital technology and online platforms to offer the 2021 conference in virtual mode, and establishing two online Communities of Practice for members.

We acknowledge with thanks our SPEVI Inc and SPEVI NZ colleagues who have accepted nomination to positions of leadership within the association. The Committee of Management of SPEVI Inc and the Executive of SPEVI NZ meet separately and jointly on a regular basis, sharing information and collaborating on SPEVI priorities. In general, SPEVI Inc membership includes Australian, Pacific Island and international members, and SPEVI New Zealand membership includes New Zealand and Pacific Island members. Details of current SPEVI Office Bearers are included in this volume of JSPEVI and on the [SPEVI website](#). Summarised below are some of the major initiatives of SPEVI during 2021.

Membership

SPEVI New Zealand membership: SPEVI NZ recently introduced reduced membership fees across its categories. Details can be found on the SPEVI website <https://www.spevi.net/spevi-nz/>

SPEVI Inc membership: SPEVI Inc. offers an online membership system. At the present time, the system accepts memberships from Australia and Pacific Island Countries, with New Zealand applications directed to the SPEVI NZ Secretary.

During 2021, SPEVI Inc implemented the following changes regarding membership:

- Enabled a Flexible joining date: the biennial (two-year) period of membership now commences from each member's date of joining.
- Reduced membership fee for Category 2 membership - Qualified Specialist Teacher (Vision Impairment) and revised required annual documentation for members in this category.
- Expanded category 3 Membership - Associate Member, to include retired professionals in VI Education, in recognition of their contribution to the field.

We encourage you to connect colleagues and parents with SPEVI. For information about the different categories of membership, please visit <https://www.spevi.net/join/>.

SPEVI 2021 Conference

Following the success of the 2020 SPEVI Conference in Adelaide, SPEVI organised a virtual conference in January 2021. This break from our traditional biennial (2-year) conference cycle enabled us to realign our conferences with other major regional events in Vision Impairment Education. The 2021 Conference Theme of 'Celebrating Change' reflected the special circumstances under which this online event took place. The conference attracted 210 delegates from eight countries, with an additional 150-200 people who registered to receive access to the presentation recordings after the conference concluded. We extend our thanks to conference sponsors, Quantum RLV (Level 3 sponsor), and to Blind Citizens Australia, Sonokids Australia, Reach & Match and Peppacode (Level 2 sponsors).

We also sincerely thank the outstanding contribution of members of the inaugural Virtual Conference Committee led by Ben Clare; the event organiser, NextSense Institute (formerly RIDBC Renwick Centre); keynote speakers, Charlotte Cushman and Emma Bennison; and the presenters who shared their knowledge and expertise in VI Education research, professional practice, and parenting. As per tradition, we held an informal SPEVI LIVES (Leaders in Vision Impairment) meeting during this conference, which, despite the timing after a long and exciting conference program, was attended by a large number of people who represented themselves or their organisations.

SPEVI 2023 Conference

SPEVI NZ will be hosting the online 2023 Conference, which will take place on 18-20 January 2023. Please save the date! The conference will be held over three shorter days to enable attendance of people from the Pacific region and internationally. We thank and wish all the best to members of the SPEVI 2023 Conference Organising Committee. The committee, with representation from the Pacific Islands, Australia and New Zealand, is currently determining a theme, identifying keynote speakers, and planning a program outline that will attract presenters and attendees from the Pacific and further afield. A survey has supported identification of themes and topics of interest. We look forward to a very successful conference.

If you are interested in sponsoring the 2023 SPEVI Conference, or for any other inquiries, please contact the SPEVI 2023 Conference Organising committee via email: spevinz@gmail.com

SPEVI Conference Papers Archive

SPEVI offers an open access repository on the [SPEVI website](#) of past conference presentations and papers. This repository is a valuable contribution to researchers, educators and allied health professionals in the field of vision impairment. The 2021 conference materials have been uploaded to the repository and include recorded keynote presentations, paper and poster presentations, and handout materials.

SPEVI Communities of Practice

SPEVI now has two online Communities of Practice (CoP). The first CoP, entitled "Online Learning", was established in March 2020 in response to the impact of the COVID-19 pandemic on teachers, students and families. This online community has enabled SPEVI members to share opportunities and challenges in education provision for learners with vision impairment and their families during the pandemic. The second CoP addresses the topic of Early Intervention for children with vision impairment (EIVI CoP). This CoP is open to members and non-members of SPEVI who have an interest in Early Intervention VI. Presentations delivered during the EIVI CoP meetings are recorded and available to registered participants on request through a private YouTube channel.

Information about the CoPs is available on the [SPEVI website](#).

SPEVI News List and Facebook pages

Subscriptions to the SPEVI News List are open to members and non-members. The SPEVI News List was established in early 2011 and at the time of writing has 485 subscribers. Subscribers share relevant information from the field of VI Education, including current research, technology advances, and educational practices.

You can read how to subscribe to the List on the [SPEVI website](#). Please note that receiving emails from the SPEVI News Lists does not imply that your SPEVI

membership registration is current. For enquiries about SPEVI membership (and to ensure you are eligible for members' benefits), please contact the SPEVI Membership Secretary at secretary@spevi.net.

The SPEVI Facebook has a strong following and was used to promote the 2021 SPEVI conference. Along with the website, SPEVI's Facebook page is a useful outward facing representation of SPEVI.

SPEVI has established a second Facebook page entitled '[Educators supporting students with V.I. in Maths](#)'. This Facebook Group page provides a platform for discussion, the posting of questions and sharing of ideas about calculator usage and mathematics options for students with vision impairment.

Supporting Members

One of SPEVI's aims is to encourage "the highest standards in the educators of persons with vision impairment by promoting research and professional training for general and specialist teachers" (Aim 2.3, [SPEVI Inc Constitution](#), 2016). In recognition of this aim and the impact of the COVID-19 pandemic on educational practice in our region and globally, SPEVI provided members with free registration for the 2021 SPEVI conference and discounted registration for non-members and exhibitors.

During 2021, SPEVI Inc. partnered with the NextSense Institute to offer member discounts for professional learning events in Vision Impairment Education. This highly successful collaborative partnership will continue in 2022 and highlights the efforts of SPEVI and the NextSense Institute to promote and support the right to quality education for children and young people with vision impairment and their families. Member discounts for professional learning are currently described on the [SPEVI homepage](#). For more detailed information, please visit the [NextSense Institute website](#). This offer is open to all SPEVI Inc. members (Australia and Pacific).

SPEVI Inc. Member Projects

Since 2018, SPEVI Inc has contributed to the Monash University Accessible 3D Printed Graphics project, an Australian Research Council (ARC) Linkage research project. SPEVI's contribution to the project has been as a member of the Round Table on Information Access for People with Print Disabilities. The project will continue until at least January 2022, when a final report will be shared. Meanwhile, monthly updates from the Monash research team can be found at: <http://accessiblegraphics.org/research/3dprints/arc/updates/>

In recent years, SPEVI Inc has been supporting innovative initiatives and projects of members that are aligned with SPEVI's Mission and Aims, and that support professional and research priorities in the field of VI education. In 2020/21, SPEVI Inc approved sponsorship of a research study by Dr Melissa Cain of the Australian

Catholic University. The study, entitled Learning to access – Lessons for learning in COVID-19 times, included a survey of participants from Australia, New Zealand and Pacific Island countries. The study has led to the development of guidelines and recommendations, with resources currently being completed. More information on this project can be found elsewhere in this JSPEVI issue.

In September 2021, SPEVI Inc approved a grant application by Phia Damsma of Sonokids Australia. The study is entitled Sonokids Ballyland app for Emergent Sonification Literacy and aims to develop an app for early learning of sonification concepts and skills, coined 'emergent sonification literacy'. Supporting this project will signify SPEVI's involvement with a new, cutting-edge technology which is anticipated to have substantive accessibility benefits for students who are blind or have low vision.

In October 2021, SPEVI Inc granted in-principle approval of a study entitled Educational access for children who are blind in Vanuatu. The study, led by Dr Joanne Webber, seeks to illustrate the lived experience of children who are blind in Shefa Province, Vanuatu. The study advocates for increased opportunities for inclusion of learners with vision impairment and is of relevance to the Vanuatu Ministry of Education and Training and other stakeholders. The study is in the process of gaining ethics approval.

The SPEVI Inc Committee of Management invites current members to consider submitting proposals for projects, activities, or events that support SPEVI's Mission and Aims, and for which a funding contribution from SPEVI Inc. is sought.

Information and the application form are available on the SPEVI website:

<https://www.spevi.net/spevi-members-projects/>

Submissions/representation on behalf of members

During the past 12 months, SPEVI Inc has participated in the following submissions on behalf of its members:

- March 2021: SPEVI partnered with 13 organisations supporting persons with deafblindness in making a submission to the Parliamentary Inquiry into Independent Assessments. This inquiry is being conducted by the Joint Standing Committee on the National Disability Insurance Scheme.
- May 2021: SPEVI was represented by Phia Damsma at the 2021 Conference of the Round Table on Information Access for People with Print Disabilities.
- August 2021: SPEVI was represented by Frances Gentle at the second Leaders workshop by NextSense Institute. Representatives of education departments and education service providers shared information and discussed challenges and opportunities in their field of VI education.

In closing this Presidents' 2021 message, we wish to acknowledge the contributions of SPEVI members and colleagues, including SPEVI office bearers, conference organisers, professionals and families supporting the right to quality education for children and young people with vision impairment. We encourage you to visit the SPEVI website to access past volumes of JSPEVI, SPEVI conference papers and presentations, and the wealth of information and links to resources and activities in VI education. It has been a great privilege to collaborate with professionals and parents over the past year, ensuring that SPEVI continues to be a strong and vibrant association that represents the interests of members and the children and families we support. Our areas of expertise are varied and complimentary, and there is strength and enjoyment in diversity!

**Phia Damsma, Frances Gentle and Sharon Duncan
Co-Presidents, SPEVI**

Addressing Culturally Responsive Pedagogy for Specialist Teachers of Vision in Aotearoa New Zealand - Elaine Gilmore

Abstract

This article discusses culturally responsive pedagogy with particular emphasis on how this is viewed in the bicultural setting of Aotearoa, New Zealand, for specialist teachers in Vision Education. Social, economic and political disparities are evident when considering the indigenous Māori people and the descendants of European colonisers in this country. Statistically, Māori are overrepresented in unemployment, incarceration, social housing, health concerns, domestic violence and in poor educational outcomes. A national approach that considers adopting a more culturally responsive pedagogy may offer a workable solution to begin to address some of the educational disparities.

(A glossary of Māori terms can be found at the end of this document).

Introduction

Significant attention internationally has been given to culturally responsive pedagogy and practice in education during the past three decades. This has been largely driven by the landmark work of Ladson-Billings' 1995 publication, inspiring educators to consider what is relevant and responsive in teaching and learning for marginalised students. Since then, there is a body of evidence reporting that diverse students are underperforming when compared to their peers in mainstream. Much has been published that presents models of school reform that have the potential to empower learning for marginalised groups in regular settings however the emphasis in reality has been on academic outcomes and national standards for non-disabled mainstream students. It is apparent there is emerging research about the relationships necessary to achieve improved learner outcomes. However, little has been documented about culturally responsive pedagogy and practice for those who may be considered marginalised and in special education environments or for those who require specialist teacher support such as students with vision impairment.

Definition of Culturally Responsive Pedagogy

Gay (2010) defines culturally responsive pedagogy as a paradigm whereby teaching is 'to and through students' personal and cultural strengths, their intellectual capabilities and their prior accomplishments' (p.26). This approach is focussed on 'interactions among ethnic identity, cultural background and student achievement' (p.28). Culturally responsive pedagogy can be theorised broadly as an intent to promote and model cultural relationships for responsive pedagogy that in turn aspires to benefit all (Gay, 2018). Interdependence is evident in that learning is deeply embedded in the type of relationship that exists between teachers, learners

and their whānau (Berryman, Lawrence & Lamont, 2018). This is about building on the capabilities which students bring to school. This can occur in three succinct ways.

Firstly, it is holding high expectations for students with scaffolding required. Secondly, it is acting on cultural competence by reshaping the curriculum to ensure it is meaningful to the individual student, and thirdly, it is building on knowledge and relationships through a culturally critical consciousness (Ladson-Billings, 1995). Culturally responsive pedagogy is not a limited and simplistic approach that uses cultural celebration as a disconnect with learning, nor does it trivialise cultural activities through community networks. It is also not a fixed and homogeneous conception that essentialises culture (Sleeter, 2012). The culturally responsive pedagogic approach embodies the understanding that students learn best when they are engaged in their own learning environment as they feel validated when they are seen as members of that learning community (Rychly & Graves, 2012).

Decontextualizing teaching and learning from culture is suggested to minimise the chances that achievement potential will be fully realised (Gay, 2018). Therefore, culturally responsive pedagogy is about nurturing the talent of a diverse population and developing an awareness of cultural possibilities through effective relationships, that results in quality teaching in which students thrive.

The Context of Aotearoa New Zealand

In New Zealand, a cultural relational intent has been the foundation of the partnership between Māori and the Crown since 1840 with the signing of the Treaty of Waitangi. Cultural relational intent is a considered obligation to protect Māori culture and to enable Māori to continue to live as Māori while the Crown is given rights to represent all. Whether this was seen as an interdependent relationship of mana ōrite with equal responsibilities held by both groups, the Māori and the Crown, or as a partnership defined by the majority (Berryman et al., 2018), continues as a subject of much debate. This latter interpretation has been well documented with research clearly stating that social and educational disparities existed historically and have continued to exist for decades between Māori and Non-Māori (Macfarlane, Glynn, Cavanagh & Bateman, 2007). It would be reasonable to suggest that New Zealand educational policies and practices have also been perpetuated by these inequities. More recently, through political and social initiatives providing understandings, a heightened awareness of the impact of this partnership from a bicultural perspective, has been raised. This has come about in many ways including that of the legal system but essentially it has been about listening with intent to the voices of iwi, hapu and whānau. Change has been slow. Legislation now exists to progress towards an agreed outcome for Māori.

Currently the National Curriculum for those in the compulsory sector, children aged 6-16 years, comprises two statements - The New Zealand Curriculum for use in

English medium settings and Te Marautanga o Aotearoa for use in settings of Māori medium. Both acknowledge the principle of the Treaty and the bicultural foundation of Aotearoa, drawn from the interpretation of the texts of the Treaty. The principle as an educational action, states that students are to be at the centre of teaching and learning, experiencing a curriculum that is engaging and challenging, is forward looking and inclusive while affirming New Zealand's unique identity.

The New Zealand Curriculum (Ministry of Education, 2015) together with a number of initiatives, provides clear guidelines for curriculum content, together with teaching and learning approaches and ways of working across the majority of New Zealand educational settings. The curriculum is complemented by an Achievement Strategy - recently revised in 2018 and then refreshed in 2020, with an ongoing focus to remedy the past inequities in education for Māori (i.e. Ka Hikitia, 2018). This revised strategy utilises Te Reo metaphors to frame teaching and learning. The Achievement Strategy reinforces interdependence providing detail in that it states that cultural relationships can be evidenced in a number of ways and outlines the parameters for a responsive pedagogy.

As described in the Achievement Strategy, cultural relationships involve:

- Whānaungatanga – taking responsibility for care and support of students and having the highest of aspirations
- Whakapapa – working to know the student and their whānau and reciprocating through knowing your own cultural identity
- Kaupapa – understanding that is a shared success through listening to the voices of all

Responsive pedagogy can be shown through:

- Wananga – using a wide range of strategies
- Ako – reciprocal responsibility
- Mahi ngātahi – working together as one (Ka Hikitia, 2018)

Such metaphors, when used in synergy, not as mere rhetoric, aspire to provide a way of embedding relationships and pedagogy.

The refreshed Ka Hikitea strategy details ways of working in teaching and learning to promote a greater shift toward a more responsive pedagogy. The document incorporates guiding principles to support the vision that Māori are enjoying and achieving success as Māori. The principles include excellent outcomes, belonging, a strength-based approach, together with productive partnerships that are aligned with the Treaty.

For early childhood, Te Whariki (2017) and Te Whariki a te Kohanga Reo (2017), sets out the curriculum for early childhood education that broadly refers to

experiences, activities and events. It foregrounds both the mana of the child and the relationship with the child, stating they are to be respectful, reciprocal and responsive.

Enacting the Treaty requires acknowledging the Tangata Whenua, the indigenous people of the country. As a curriculum principle, delivery requires a deeper understanding of what this means for all. This requires acknowledging the Treaty of Waitangi, the bicultural foundation of New Zealand and enabling students to acquire knowledge of Te Reo Māori and Tikanga Māori. The principle is visionary and is expanded to encompass three actions – partnership, protection and participation. Partnership aims to harness the knowledge and expertise of all who contribute to learning. It is about working together in all aspects of decision making.

Protection is about having a willingness to learn and understand the importance of Māori values and beliefs as a way of life, for only then are we able to actively promote Māori knowledge, interests, values, identity, language and culture. Perhaps the words ‘culture counts’ epitomises this second action (Berryman et al., 2018). Participation is about creating a framework of inclusion and equal opportunity where every success is celebrated. This is aspirational in that ākonga learn how to contribute as active citizens through opportunities provided (Ministry of Education, 2018).

The educational sector groups in New Zealand are legally directed to respond to this principle and actions and provide leadership that demonstrates a pedagogical approach that promotes effective cultural relationships, as defined by these national documents. This is required to occur through School Charters where policies and procedures are presented.

Blind and Low Vision Education Network New Zealand

BLENNZ (Blind and Low Vision Education Network New Zealand) is a key stakeholder in the New Zealand’s specialist education system. In 2021, service delivery from this school involves approximately 1600 students with a recognised visual condition or visual functioning concern that impacts on access to the curriculum. Teaching and learning is provided by a staff of approximately 150 registered teachers. It is reasonable to suggest that BLENNZ is a recognised leader in the enactment of this response to the Treaty. This is not about iconography, tokenism or trivialisation; it is about documenting a student-centred approach in policies and procedures that lays the foundation for pedagogy and practice for vision education nationally.

This approach has emerged through a considered relational dialogic space that has and continues to be consultative and fully embedded in biculturalism. To do this, the voices of Kāpō Māori Aotearoa, Tamaki Ngati Kapo, and Te Whānau o Homai - key focus groups from both Māori and the “blindness community”, merged, approximately a decade ago, to form a Working Party to develop and document this

principle. The BLENNZ Charter, as prescribed by the Board of Trustees who are representative of both cultures, now uses Te Reo to clearly define what this principle means. This is putting students in the centre of teaching and learning, producing an engaging curriculum that is forward thinking and inclusive and is that which affirms the unique identity of Aotearoa. Relationships with iwi are paramount, culture is valued, contexts are both inclusive and responsive (Bishop, 2011). Interactions amongst all are normalised, learning from one another is pivotal, especially so, is that of the relationship of shared empowerment between kaiako and tamariki.

BLENNZ Charter Strategic Goals (2021) are as follows:

Vision: Every BLENNZ ākonga is well prepared to achieve in life	
Mission: To enable ākonga who are blind, deafblind or have low vision to reach their full potential, BLENNZ provides quality education and specialist teaching services in partnership with whānau, educators and the wider community	
Beliefs	Values
<ul style="list-style-type: none"> • Parents and whānau are the prime educators in their child's learning • Education is focused on the ākonga within the context of whānau, community and culture • Learning occurs through active engagement in meaningful environments • Ākonga have unique needs requiring specialist learning and teaching approaches • Ākonga have the right to equitable access to education • Ākonga have a right to belong and to realise their potential as participating and contributing members of society • Team collaboration promotes positive outcomes for ākonga 	<p>BLENNZ whānau includes ākonga, their whānau, educators and the wider community.</p> <p>Whānaungatanga</p> <p>At BLENNZ, we demonstrate whānaungatanga through valuing people by building relationships with whānau, prioritising time to get to know them and establish connections.</p> <p>Manaakitanga</p> <p>At BLENNZ, we elevate the mana by showing respect for their emotional, spiritual, cultural, physical and mental wellbeing in the way we welcome, nurture and nourish them.</p> <p>Awhinatanga</p> <p>At BLENNZ, we demonstrate awhinatanga through the spirit in which we engage and empathise with each other by assisting the learning of ākonga and whānau.</p>

Beliefs	Values
	<p data-bbox="810 253 997 291">Kotahitanga</p> <p data-bbox="810 315 1372 526">At BLENNZ, we demonstrate kotahitanga through striving to reach consensus and unity of purpose, while acknowledging and respecting individual differences and perspectives.</p> <p data-bbox="810 551 869 589">Ako</p> <p data-bbox="810 613 1385 862">At BLENNZ, we demonstrate ako through creating opportunities where we can learn from each other, recognising that everybody brings knowledge and that ākongā and whānau are intertwined.</p>

The Role of the Specialist Teacher of Vision: BLENNZ

Specialist teachers in Vision Education in New Zealand are generally all employed by BLENNZ and are referred to as Resource Teachers: Vision, (RTV). Although diverse in some ways, the specialist teachers would not be considered representative of the increasing cultural diversity of the learners with whom they work (The Education Hub, 2020). This is confirmed by reporting which suggests less than 1% of Specialist Teachers of Vision identify as Māori, based on their whakapapa, whereas statistically the BLENNZ data base records 22% of students identify as Māori. These specialist teachers in vision aspire to the Mission, Beliefs and Values of BLENNZ. Most provide an itinerating service which encompasses a wide geographical area, nationally and regionally. This means teachers engage in a myriad of professional relationships with a number of whānau and ākongā, located in homes, and in a variety of educational contexts and communities, both urban and rural. Each setting and individual is likely to require a range of support and expertise. The role of the teacher is to ensure identified ākongā are able to access the National Curriculum and learn the skills necessary to reach their full potential utilising the domains within the framework of the Expanded Core Curriculum (Hatlen, 1996), the latter in respect to their visual needs. In order to do this in a respectful and meaningful manner, the RTV is required to 'create a context that is responsive to the culture of the tamariki, based upon the notion of relationships that are paramount to education performance (Bishop, 2011).

The most important thinking for an RTV is to realise that it is the relationship with those involved that is critical. It is about the phrase 'know your learner'; it is about facilitating shared learning, building a learning community and connecting with the

wider community. As (what may be termed) ‘agents of change’ (McLinden, 2020), RTV are facilitating new learning while empowering individuals to make the changes they seek in their own lives. For the moment, it appears challenging for some specialist teachers of vision to prioritise time to build relationships that are culturally responsive. The focus seems to be on educational outcomes, plus administrative tasks, reporting and travel schedules that are somewhat less than flexible. Without a deep understanding, knowledge, willingness and confidence to both model and implement effective, sustainable cultural relationships for responsive pedagogy, no matter what the context, the mission of BLENNZ and the visionary principle of Te Tiriti o Waitangi is yet to be fully realised.

Professional Development

Little is documented in the literature about the value of professional development in cultural relationships for responsive practice so that teachers, including specialist teachers of vision, know what this approach means, how to develop their skills and why it is important. A number of articles, eg: Coleman (2020) and Pasyk (2015), detail how to provide students who are vision impaired with experiences that enhance their cultural understanding. These are largely suggesting an activities-based approach and literacy programmes presented in regular classrooms. Although this is important, it does not necessarily support the change required for teachers to both practically and attitudinally build effective cultural relationships that ensures culture is embedded in new learning. This requires so much more.

However, improved student outcomes for a bicultural approach and a way forward in the New Zealand educational setting are referenced in work such as the Te Kotahitanga project (Bishop, Berryman, Cavanagh & Teddy, 2009). Their work led to the development of what is termed an ‘Effective Teaching Profile’ using six metaphors of manaakitanga, mana motuhake, nga whakapiringatanga, wananga, ako and kotahitanga to provide a framework for teaching and learning. Others, such as Rychly and Graves (2012), provide guidelines in a similar manner. They suggest teachers need to be; caring and empathetic, reflective about their own beliefs about other cultures, reflective about their own cultural frames of reference and knowledgeable about other cultures. Documents such as Te Pikinga ki Runga (Macfarlane, 2009) and the Hikaira Schema (Macfarlane A, Macfarlane S, Tierney, Kuntz, Rarere-Biggs, Currie, Macfarlane R., 2019) encourage culturally responsive teaching in early childhood settings. Macfarlane’s (2009) Edicultural Wheel refers to whanaungatanga (building relationships), kotahitanga (ethic of bonding), manaakitanga (ethic of caring) and rangatiratanga (teacher effectiveness) and provides a model to shape culturally responsive pedagogy. Such guidelines and the models noted are helpful but are not necessarily currently highlighted as resources for new learning for mainstream compulsory sector teachers, nor for teachers, nor for those in vision education.

Perhaps the first step for specialist teachers of vision is to be self-reflective, to consider their own culture and beliefs so they in turn are open to valuing that of others. It is about creating a safe and supportive environment, encouraging a discussive curriculum, enabling student self-determination while connecting with whānau. Use of Te Reo, presenting mihi and pepeha, using karakia and whakatau are then likely to extend beyond what could be considered tokenism by some, to an enhanced understanding and valuing of Māori traditions and language. With the knowledge and support of informed leaders, Te reo me nga tikanga Māori, as reflected in the concept of poutokomanawa can become the reality. Together with this increased understanding, is the development of partnering skills to learn how to collaborate with and across communities with whānau in an empathetic manner. It is a complex way forward, as it requires a personal and professional commitment. This is aspirational for all who teach in Aotearoa.

Summary

Cultural responsiveness in education requires teachers to respond to culture whatever the context, to connect learning with the students' background knowledge and present information in a way that is responsive to an individual's natural way of learning. In order for this to be sustainable, cultural responsiveness means authenticating curriculum values, together with that of the diverse knowledge and practices of all. It is comprehensive in that it incorporates ways of knowing, cultural experiences and practices, while empowering others through meaningful relationships and transformative practice. In New Zealand, Māori culture is deeply embedded in all aspects of life and it is through informed educational approaches that demonstrate effective, respectful cultural relationships, the reality of a truly bicultural nation will be evident for future generations. The journey for teachers continues, not just for specialists in vision education. Reflecting on Ladson-Billings seminal work, this is about setting high expectations, supporting the reshaping of the curriculum while developing one's own cultural consciousness. It is this cohort of specialist teachers who have been given the framework from BLENNZ, who have the opportunity to continue to lead the way toward culturally responsive pedagogy and practice, that empowers all to be the best they can be. There is a way forward to begin to address the educational disparities evident to all in Aotearoa...

Ma te reo ka kite e matauranga I te ao Māori.

Let us see and be guided by the knowledge of Māori and our language.

Glossary

Ako: To learn, study, instruct, teach, advise.

Ākonga: Student, learner.

Aotearoa: New Zealand.

Awhinatanga: Caring for others, being of service to people and meeting their needs.

Hapū: Kinship group. Section of a large kinship group. A number of related hapū usually form an iwi.

Iwi: Extended kinship group, tribe. Often refers to a large group of people descended from a common ancestor and associated with a distinct territory.

Kaiako: Teacher.

Kāpo Māori Aotearoa: Blind Māori of New Zealand – Charitable organisation to support blind Māori and whanau.

Karakia: Māori incantations and prayers.

Kaupapa: Topic, policy, matter for discussion, plan, purpose, scheme, proposal, agenda, subject, programme, theme, issue, initiative.

Kohanga Reo: Māori immersion early learning centre.

Kotahitanga: Unity, togetherness, solidarity, collective action.

Mahi ngātahi: Work together.

Manaakitanga: Hospitality, kindness, generosity, support and respect.

Mana: Prestige, authority, control, power.

Mana Motuhake: Separate identity, autonomy, self government, control over one's own destiny.

Mana ōrite: Equality.

Ma te reo ka kite e matauranga I te ao Māori: Let us see and be guided by the knowledge of Māori and our language.

Mihi: Greeting, pay tribute, acknowledgements.

Nga whakapiringatanga: Managing the classroom to promote learning.

Pepeha: A way of introducing yourself, establishing identity and heritage and to make connections.

Poutokomanawa: The centre supporting pole of a traditional meeting house.

Rangatiratanga: Chieftainship, right to exercise authority and independence.

Tamaki Ngāti Kāpo: Auckland community group supporting blind Māori.

Tamariki: Children.

Tangata Whenua: ‘People of the land’ indigenous people of New Zealand.

Te Kotahitanga Project: A New Zealand Ministry of Education research and professional development initiative to raise the educational achievement of Māori students at secondary school.

Te Marautanga o Aotearoa

Māori medium curriculum.

Te Pikinga ki Runga

Assessment, analysis and programme planning framework to guide interactions with Māori and their whanau.

Te Reo: ‘the language’ Māori language.

Te reo me nga tikanga Māori: Māori language and traditions.

Te Tiriti O Waitangi: The Treaty of Waitangi.

Te Whāriki: Early Learning Curriculum.

Te Whānau o Homai: Extended ‘family’ group of Homai campus.

Tikanga: Practices and values.

Wananga: Collection of knowledge, instructor, learning institute catering for Māori learning needs.

Whakapapa: Genealogy, lineage, descent.

Whakatau: Informal welcome.

Whānau: Extended family, family group. Sometimes used to include friends who may not have kinship ties to other members.

Whānaungatanga: Relationship, kinship, sense of family connection. A relationship through shared experiences and working together.

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Remote Learning for Students with Visual Impairments: Successes & Challenges - Katie Ericson and Belinda Rudinger

Abstract

In March 2020, many schools swiftly shifted to online instruction due to the COVID-19 pandemic. Teachers of students with visual impairments (TVIs) faced additional challenges in providing meaningful instruction. In this article, we summarize some of the successes and challenges experienced by TVIs in delivering online instruction. We offer recommendations based upon recent research on access and two student case studies. Themes discussed include building relationships, training for assistive technology, and promoting empowerment, independence, and self-determination.

Introduction

While the COVID-19 pandemic affected everyone in different ways, instruction for students with visual impairments was impacted in a unique manner. Students who depended upon tactual materials (braille, tactual symbols, tactile graphics) typically provided at school by a brailist, media specialist, or teacher found themselves at home with barriers to such access. In addition, instructional techniques such as hand-under-hand prompting were unavailable during this period. Ultimately, the rapid switch to virtual learning without training or preparation of devices left students without a way to receive the assistance they needed. Technology could provide a bridge but could also act as a barrier as schools shifted to digital options without ensuring accessibility or usability.

Access for Students with Visual Impairments

McLinden et al. (2016) describe two different types of learning for students with visual impairments. The first is “access to learning,” in which accommodations and materials adaptations are provided by professionals in order to support a student’s ability to access grade-level content and information. These adaptations typically fall to a brailist or digital media specialist, as well as teachers of the visually impaired (TVIs). The coordination of these materials requires time for teamwork and collaboration.

A secondary role held by TVIs involves teaching a student how to independently access information for the purpose of their own learning. As students mature and roles are released, students should be in a position to take control of their own “learning to access”. McLinden et al. (2016) noted that while TVIs may recognize the difference between these two modes, teachers often focus more upon the immediate needs of providing access to learning, rather than the greater long-term priority of facilitating students’ learning to access. Their work provides a powerful reminder that access must be taught, developed, and coached. It’s all too easy for TVIs to neglect

this important area of instruction in order to meet short-term needs with a focus on “putting out fires”, but the pandemic highlighted the critical importance of independent access. Students who had the opportunity to build their “accessing to learn” skills were better positioned to traverse the rapidly shifting landscape of virtual instruction during the pandemic.

Similarly, Siu & Wall Emerson (2017) described a new way to conceptualize the role of the TVI: as an “Accessibility Facilitator”. This reimagined role involves promoting access to instruction for students, serving as a key decision maker and liaison between various groups in school districts (such as assistive technology and instructional technology), and streamlining digital workflows for students in order to support their own independence (Siu & Wall Emerson, 2017). This role of **accessibility facilitator** was prevalent during the pivot to virtual learning; as face-to-face instruction gave way to digital options, TVIs were in a unique position to advocate and explain the access needs of their students.

Throughout the pandemic, Dr. Penny Rosenblum, research director at the American Foundation for the Blind, carried out two distinct studies in April 2020 and November 2020 regarding the access, experience, and engagement of students with visual impairments. The first study, which gathered data from 1,921 families and vision professionals in the United States, painted a picture of the ways students in early intervention, preschool, and school programs were impacted by the rapid shift to virtual and online learning. The first study showed that students had tools at school that they couldn’t access at home. For example, 17% did not have a tablet, 21% did not have a laptop, 18% did not have a Perkins braille, 55% did not have large print books, 50% did not have screen reader software, and 28% did not have recreational braille books (Rosenblum et al., 2020). Recommendations from the first study included providing access to mainstream technology and proprietary assistive technology, ensuring that learning platforms/tools are both accessible and reliable for all, allocating time for professionals to teach families and students how to use technology, and providing accessibility training to both general education and special education teachers (Rosenblum et al., 2020).

The second study, in November 2020, included data from 662 vision professionals and family members to explore the advancing attempts to provide educational solutions in the midst of the pandemic. This second study revealed additional and ongoing challenges, but also highlighted a number of successes. Key findings included the fact that regardless of location, family members of students in early intervention programs felt overwhelmed balancing more roles than simply “parent” (Rosenblum et al., 2021). In addition, there were mixed conclusions on the spectrum of services from online to hybrid to face to face. Some family members found the changes had negative impacts on their children’s learning, while others saw an increase in their children’s skills. Either way, more children were receiving educational services in the fall study than had been in the spring (Rosenblum et al.

2021). However, many applications and websites had usability and accessibility issues, particularly when using Chromebooks (Rosenblum et al. 2021). Infrastructure and organizational barriers remained obstacles to access. TVIs also reported more difficulties attempting to coordinate with general education teachers to adapt materials. Recommendations from the second study involved recognizing the importance of teamwork, working to ensure full participation in education through access to digital learning and to the curriculum, and an awareness of the need to focus on the mental health needs of not only students, but also families and professionals (Rosenblum et al. 2021)

In the case studies that follow, the themes from this research are highlighted in the students' and TVIs' stories. TVIs working with students during the pandemic on two different continents served as accessibility facilitators in new and unexpected ways, with a focus on finding new means of providing access to learning. In addition, they navigated a quick pivot to rapidly shore up students' abilities to leverage their own accessing-to-learn skills. Through assistive technology, trial and error, as well as collaboration and teamwork, new bridges to access were found (and sometimes forged) while troubleshooting the numerous barriers blocking our students' paths.

Case Studies

Student 1

Bobbie (a pseudonym), a 12-year-old student with recently diagnosed juvenile macular degeneration, transitioned to middle school at the beginning of the 2019-2020 school year. She participated in academic classes independently, supported by accommodations, such as large print, and assistive technology. As part of her transition to middle school, Bobbie received new assistive technology, including a portable video magnifier and Apple iPad. Accordingly, her instructional goals addressed self-determination and her successful use of AT in the classroom.

Like many students, Bobbie experienced some initial struggles with online instruction, but with the support of her parents, she soon established a routine and began to experience success in her studies again. However, shortly after the transition to digital learning, her special education teacher/case manager returned to the United States. Furthermore, Bobbie had not yet mastered the use of her assistive technology devices. She had been successful in using her video magnifier and iPad under the guidance of her teachers and her assistants, but she was not yet proficient in using note-taking and screen-reading apps independently.

To overcome these challenges, her education team, including the school's education technology specialist, partnered with Bobbie and her family to provide weekly assistive technology training sessions via Google Meet and Microsoft Teams. The first sessions focused on use of her video magnifier; later sessions emphasized note-taking and reading with her iPad. After several sessions, Bobbie's mother felt

more empowered, communicating regularly with the education team and sharing Bobbie's successes.

Once Bobbie felt comfortable using her iPad, the team encouraged her use of technology to track her progress on self-determination goals. Using an app, she noted if she had encountered barriers to access in class, what steps she had taken to advocate for herself, and whether she had asked for assistance in advocating. Bobbie's TVI shared the document with her family, who provided additional feedback, and talked with her about her learning experiences.

While Bobbie's TVI had worked closely with students' families prior to the pandemic, these relationships took on new meaning during the pandemic. Communication with parents and families increased, in order to ensure access to the digital curriculum. Where her TVI had once emailed or called parents once a month, communication now occurred daily or weekly. The TVI's role quickly shifted from teacher to facilitator, verbally coaching Bobbie, often with her family, through tasks on her assistive technology.

An additional benefit was working with families to plan activities they could implement to foster their child's independence. Together, Bobbie's team planned safe outings in her neighbourhood that would reinforce orientation and mobility (O&M) concepts, such as cardinal directions. These O&M lessons helped Bobbie grow in her self-confidence, and they also allowed her parents the opportunity to directly support her. Even after Bobbie's school returned to face-to-face instruction, her education team maintained regular communication, building on what had been learned--that strong relationships between families and educational teams are key.

Student 2

Maria (also a pseudonym), a bilingual 18-year-old high school student, was a braille user who depended upon assistive technology to access her classroom materials in the general curriculum. She had no residual vision, only light perception. Maria attended academic classes independently, supported by accommodations, assistive technology, and embossed braille materials and tactile graphics. When schools initially shut down in the spring of 2020, she had a 40-cell refreshable braille display, an Apple iPad, and a laptop with the screen reader JAWS at her disposal from her school district. While it may sound as though she was fully prepared to work independently at home, her team quickly ran into multiple issues. One concern was that she was still in the process of learning how to use her devices and was not yet fully independent. She was proficient at using her iPad with a refreshable braille display to send and receive emails, read materials, and compose written responses. For math, she relied on embossed math materials and used a Perkins manual braille writer and talking TI-84 graphing calculator. This workflow was successful in an environment where she and her teachers were at school daily and able to coordinate her materials. However, Maria had only learned keyboarding three months prior to

the onset of the pandemic, in a beginning effort to transition from using six-key entry on her refreshable braille display. She was also still a beginning screen reader user. She was not yet able to independently use Canvas, her high school's learning management system, even with her iPad and refreshable braille display. She relied on emailing teachers back and forth with her assignments and using embossed braille. She had instructional goals to improve her screen reader and computer skills and learn independent use of the Canvas learning management system, but the pandemic fast-tracked these goals and made them an immediate priority.

An additional issue Maria faced in the transition to virtual instruction involved basic networking issues related to the permission and controls required on her school district devices. She did not have administrator-level access and therefore was unable to download software and applications that we needed, including software that would allow her TVI to remote into her computer or share her screen. Potential workarounds involved using her personal phone and a personal refurbished laptop with JAWS screen reading software. She had won this device from a non-profit organisation in a drawing at a local blindness event, but she had barely opened it prior to the pandemic because she preferred using her primary method of iPad and refreshable braille display. Transitioning to primary use of this personal laptop rather than her restricted school-issued devices paved the way to not only access, but independence and self-determination.

Initially, the special education department recommended a conferencing platform called GoTo Meeting for use in virtual instruction. While using the phone allowed for a way for her TVI to verbally coach Maria through downloading and installing the software on her personal devices, they discovered accessibility issues such as unlabelled buttons that rendered it useless with a screen reader (both VoiceOver on her personal iPhone and JAWS on her personal laptop). They then experimented with other conferencing options, such as FaceTime using our personal devices, but they still needed a way for Maria to share her screen and allow remote access for troubleshooting. JAWS Tandem was the next option they explored, since it was built into the software she was already using (JAWS screen reader software). This solution had promise, but there were several limitations. To use JAWS Tandem, they discovered that they both had to be using the exact same version of JAWS on their separate computers. They were temporarily able to resolve this because of the generosity of Freedom Scientific's three-month free subscription to JAWS for TVIs and other professionals navigating the pandemic. However, even once they were on the same version, they experienced issues related to Maria's slower internet speed whenever they tried to connect. Ultimately, the school district eventually offered Zoom video conferencing software, which became their solution by allowing for screen sharing and remote control.

One unexpected benefit of these shared experiences was how working virtually invited (rather, forced) Maria and her TVI to slow down instruction and necessitated

that they work through breakdowns through a coaching method that facilitated her independence. As an educator, Maria's TVI had to stretch her own skills and patience by slowly verbally instructing her through various tasks, processes, and workflows. In the past, particularly since Maria was still learning to use a laptop and screen reader software, a quick reach across her keyboard could fix most any issue she encountered. Before this experience, the TVI failed to realize how many opportunities had been missed to facilitate her independence by jumping in too quickly. Through trial and error, Maria's keyboarding, computer, and JAWS skills improved. The competence that she experienced by downloading and installing her own software and solving her own problems made a powerful impact on her independence and self-confidence.

In addition to rapidly improving her assistive technology skills, Maria became connected to a wide variety of additional sources of support. She signed up for webinars through Hadley School for the Blind, a local Lighthouse for the Blind, and the American Printing House for the Blind Virtual Excel Academy. She improved her skills on Canvas, and built skills in uploading and downloading documents, locating items on her computer, and navigating complicated discussion posts. Overall, Maria and her TVI learned that technology can be both a bridge and a barrier. They learned that less is often more, strong relationships are critical, and that allowing students to experience 'supported struggle' can enhance their independence. Ultimately, Maria's story highlights the hidden successes that can occur even in these times of such difficulty. The pandemic fast-tracked the focus on her learning to access skills, which ultimately helped her successfully transition from high school graduation to full-time university study.

Recommendations and Future Research

Between our experience with students and the recent research on access and engagement, the following recommendations for practice and future research are offered. First of all, the importance of partnerships with parents cannot be overstated. Strong relationships built prior to the pandemic allowed for a smoother transition with fewer issues. Even if those relationships were not already well established, the pandemic provided a novel opportunity to explore unique ways to make connections. Finally, the pandemic provided an opportunity for TVIs to consider different accommodations, as well as advocating for their students in new and different ways.

In practice, the use of personal devices to supplement institutionally managed devices is strongly recommended. To facilitate this possibility, sources for personal devices should be explored, such as Sightsavers, grants, and local agency specific options such as Specialized Telecommunications Assistance Program. In addition, transition plans should include more autonomy built into institutional devices in order to facilitate greater self-determination and ownership.

However, practicing TVIs should not wait until transition planning to introduce assistive technology. Rather, TVIs should embrace teaching technology skills at an early age, emphasizing use of a wide variety of tools and options. Flexibility and adaptability within assistive technology should also be modelled. Students should be taught that there are multiple ways to use technology, rather than becoming reliant on one mode (such as six-key entry rather than keyboarding). Administrators should be implored to understand that students with visual impairments need not only an extensive array of technological tools, but also intensive, consistent, long-term instruction in assistive technology.

Research is recommended on specific assistive technology options for remote learning specific to three broad categories: screen reader and braille users, students with low vision, and students with multiple impairments. A third Access and Engagement series is underway at the time of this publication, which will yield additional data and reflection on the needs for advocacy for this population.

As researchers and practitioners alike navigate the challenges posed by the rapid shift to virtual, online, and hybrid methods of instruction, it is important to not only survive these experiences, but leverage them by using the lessons we gain for the purpose of improving and transforming future approaches to education. Recognizing the ways that technology can erect both barriers and bridges can allow us to serve as accessibility facilitators who promote our students' abilities in not only the short-term skill of learning to access, but also the long-term goal of accessing to learn.

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The Impacts of COVID-19 Restrictions on Learning for Students with Blindness and Low Vision In Australia and the Pacific - Melissa Cain, Melissa Fanshawe and Polly Goodwin

Abstract

2020 was a year of confusion, distress, anxiety, and concern for students, teachers, families, and communities. The unknown consequences and unpredictable spread of COVID-19 impacted acutely on teaching and learning, and continues to impact students' academic progress, social relationships, and mental health into 2022. A helpful body of research has emerged on the overall effects on learning globally. Much less has been written on how students with disability and their teachers coped with school closures and other restrictions, and very little about the impacts on learning for students with blindness or low vision (BLV). To contribute to this gap in the literature, the authors (supported by a SPEVI research grant) conducted a survey and open-ended interviews with teachers of students with BLV in Australia and several Small Island Developing States (SIDS) in the Pacific region. An overview of this research project and initial results is presented.

Introduction

The South Pacific Educators of Vision Impairment (SPEVI) Inc. Committee of Management offers members the opportunity to undertake research to contribute to the field of supporting students with blindness and low vision (BLV). This paper presents an overview of one such project. The research aimed to detail barriers to learning for students with BLV in Australia, New Zealand, and several Small Island Developing States (SIDS) in the Pacific region during the global COVID-19 pandemic, and to document key learning to inform future responses. Australia is a developed nation with a strong economy and health system. By contrast, Pacific SIDS face a host of challenges such as remote geography, limited resources, susceptibility to natural disasters, and the effects of climate change (UNESCO, 2021). Despite these differences, there are similarities in the ways that barriers to learning presented themselves during COVID-19 restrictions, including “unrealistic assumptions of home internet reliability and parental ability to supervise learning” (Freeman et al., 2021, p. 7).

Viewed through the lens of specialist advisory teachers, the results have informed a series of six ‘drivers’ or factors that drive how well a student fared during this period of disruption, uncertainty, and change emerged. These drivers were explored over four response stages (when a disruption is theoretical; when a disruption is likely; during a disruption; after a disruption) to detail key learnings from which to build a longitudinal foundation to support responses to future health emergencies and

natural disasters. This article will describe the methods of the study and a concise initial description of the results. To provide context to this, a review of what exists in the literature related to the research follows.

Literature overview

Recent global investigations into impacts of COVID-19 restrictions on student learning have revealed three pertinent themes: preparedness, technologies, and relationships (Watermeyer et al., 2020; Oliveira, 2021; Flack et al., (2020). In a general sense, for students who had access to computers and the internet, experience with applications and programs, as well as family or community support did well during the transition to online learning. Many students, however, had parents who were either unable or unwilling to support them in their learning, or family members who required financial or medical support themselves and limited or no access to digital technology (Cain & Phillips 2021; Cain et al. 2021, under review).

Kim and Asbury (2020) suggest that school closures and associated restrictions serve to highlight deep-rooted sociocultural injustices and inequity of access, and as such, amplify the experience of disadvantaged and vulnerable students. The top concerns of 3,500 teachers from Australia and New Zealand across all school sectors during the move to online learning included concerns about students' social isolation, the decrease in student well-being, and the overall loss of learning (Flack et al. 2020). For teachers in particular, the loss of social connection with students and resulting ineffectiveness of their teaching caused considerable anxiety amongst respondents. As such, concern for vulnerable students such as those with disability, those from challenging family circumstances, and students for whom the language of instruction was not their first language, became teachers' greatest focus (Cain et al., 2021; Cain & Fanshawe, 2021a). This is no surprise to educators, as teaching is inherently a social practice, and "care is integral to successful teaching" (Cain et al., 2021, under review).

Whilst the range of research that has been published since COVID-19 emerged in March 2020, has been robust and enlightening, research into the effects of COVID-19 on learning for students with disability is more limited, with few studies focused on the Pacific region. In a survey conducted by Children and Young People with Disability Australia (CDYA) (Dickinson & Yates, 2020, Dickinson et al., 2020) respondents indicated that their child received fewer individual adjustments when learning online. Only half of the respondents reported that learning material and experiences were accessible to their child. Parents reported being worried about a decline in mental health for their child, themselves, and their family, and were particularly concerned that educational gains made in the classroom would be lost during this time. Contrastingly, there has been some indication that for students with Autism Spectrum Disorder and debilitating anxiety, online learning might be the preferred way of learning (Cain & Phillips, 2021). Studies in the USA such as by

Tremmel and colleagues (2020) suggests that educators should capitalise on ways of working utilised by rural special education schools as useful recommendations for future closures and restrictions. This study recommends that when transitioning to remote teaching, schools prioritise already established family-school-community relationships, focus on quality and continuing professional development, and maintain strong and open lines of communication as rural schools typically do.

For students with BLV, digital technologies hold the potential to provide greater equity of access but can also become significant barriers if learning activities are designed without accessibility in mind (Cain et al., 2021; Metatla et al., 2018). There is an abundance of research indicating that the majority of preservice teachers have grossly insufficient skills in differentiating both content and processes for students with disability and have little or no understanding about how to differentiate the curriculum for students with BLV (Cain & Fanshawe, 2020; Cain & Gibbs, 2020; Round et al., 2018). This underscores the importance of the academic and technical support provided by specialist advisory teachers. In Australia, most students with BLV have access to advisory teachers who can provide solutions to barriers of access. This is only effective of course, if school leaders and classroom teachers support the implementation of this advice (Cain et al., 2021). Research into inclusivity in general, and inclusive practice in online learning more specifically, acknowledges that it is not just content that needs to be accessible, but learners with BLV have important cognitive, social, emotional, behavioural, and collaborative needs and expectations that are harder to fulfil in the online space (Cain et al., 2021; Cain et al. 2021 under review). Indeed Wilkinson (2020) highlights that people with BLV experience loneliness at higher levels than the general population and as such, additional attention to socioemotional needs is required.

Methods

This research was financially supported through a 2021 South Pacific Educators in Vision Impairment (SPEVI) members' research grant to examine the impact of COVID-19 on learning for students with BLV in Australia, New Zealand, and the Pacific. The lead author sought funding through SPEVI for the study, gained ethical approval through the Australian Catholic University, and wrote the survey and interview questions. The second author conducted the interviews and completed the initial data findings, and all authors were involved in analysis of data and preparation of this article.

Research Design

Qualitative methodology was chosen for the study to provide a rich understanding of the participants' "lived experience of change" (Calman et al., 2013, p. 1). Surveys and interviews were used to understand the unique experiences of teaching students with BLV in COVID-19 times. The survey was created using Qualtrics, an online survey platform and ran from February-May, 2021. Two surveys were distributed to

customise results according to whether the participant countries had been impacted COVID-19 restrictions or had not. The surveys consisted of 15 questions as shown in Appendix One. Questions centered around equity of access, the social, emotional, and academic impacts on student learning, and key sources of assistance for teachers. Participants were also invited to engage in a 30-minute open-ended interview in April-May 2021, to provide further details about their experiences and a variety of case studies in greater depth. The interviews focused on capturing narratives of practice; what changed in the educational and broader settings and how were educators responding; how equity of access fared when restrictions were in place; and most importantly, what learnings came out of the experience.

Participants

Participants included specialist advisory teachers who worked with students with BLV in Australia and Pacific SIDS. An invitation to participate in the survey was sent out to all SPEVI members, directly through the SPEVI list and advertised through the SPEVI Facebook site. Survey participants were provided with information about the study prior to commencement, advised that participation was voluntary, and that they would not be identifiable in any reporting of the data. The participant information letter and consent statement formed the first page of the survey. Once participants read these, they could choose to proceed or leave the survey. From the two surveys, there were 21 responses; nine participants had completed the survey indicating they were impacted by COVID-19 and one participant completed the survey, who had not. For the interviews, purposive sampling was used to contact teachers through professional networks with the intent to collect a diverse array of teaching experiences in varying contexts. Interviews were conducted with nine participants which obtained a selection of case studies from throughout Australia, New Zealand, Pacific SIDS (specifically teachers working in Fiji, Papua New Guinea, Vanuatu, and Kiribati).

Data Analysis

Data was analysed through Trello, an online collaboration program which enabled the researchers to upload the responses and sort and code the data. The researchers examined recurring data codes, patterns, and themes covering challenges in teaching and learning, specific teaching practices, and resource usage. Further, anomalies and innovations were highlighted and analysed for their potential for illustrating ideas/ approaches/ strategies in resources developed. Geographic location, ethnicity, age, teaching sector, and teaching experience on patterns of experience were also assessed to determine notable outcome variables.

Results and Discussion

Participants in this study reflected a range of life and educational experiences during the pandemic in addition to geographical and cultural disparities. Some faced long-

term restrictions to movement that impacted both them and their students' ability to work together physically in the same space (for example, the Australian states of Victoria and New South Wales). Others weaved in and out of this necessity for remote learning as restrictions were put in place, then eased, and were enforced again. Most participants were subject to testing, contact tracing, border closures, lockdowns, and eventually encouraged to receive vaccination. Despite this broad base of experiences, the researchers noted that a pattern began to emerge relating to a number of drivers: that is, a list of factors which drive how well a student fared (or not) during this period of disruption, uncertainty, and change. These drivers included:

- The student geographic and socioeconomic context;
- Provision of accessible materials;
- Access to, and familiarity with digital technologies;
- Support from specialist vision teachers and other stakeholders;
- Support from families and community; and
- The degree of preparation for interruptions to learning.

A preliminary review of the research findings is presented through these drivers.

Student Context

The learning disruptions caused by COVID-19 varied enormously depending on students' geographic and socioeconomic contexts. States and Territories within Australia experienced (and continue to experience) widely disparate numbers of COVID-19 infections, hospitalisations, and mortality rates. Corresponding responses from lawmakers, politicians, and health advisors similarly resulted in vastly different recommendations for citizens (Stobart & Duckett, 2021). While most SIDS closed their borders early avoiding cases of COVID-19, they were not well prepared to deal with the virus when it hit their shores and the resulting changes to educational delivery. In Papua New Guinea (PNG), for example, and despite a crisis response program of US\$500 million, accessible and affordable online teaching in schools scattered throughout the country was never considered feasible due to PNG's already poor economic situation and the effects of increasing unemployment. As noted, SIDS share fragile ecosystems and susceptibility to natural disasters. From April 6-9, 2020, for example, Cyclone Harold created significant damage in the Solomon Islands, Vanuatu, Fiji, and Tonga at the same time as the first effects of COVID-19 were felt, compounding issues of access (Australian Government, 2020).

The effects of COVID-19 seemed to amplify challenges for students with disability, including challenges that teacher may not have considered previously:

COVID has shone a light on the disparities in equity access. You know, the 'haves and the have-nots', which is something which we weren't really aware of in the past. You just did your job. Some kids seem to manage, and some didn't. But once the pandemic hit, suddenly you had much more awareness of the disparities. (Victoria, Australia).

BVL can be a significant barrier to learning in itself. Adding complex socioeconomic barriers and compounding this with unexpected remote learning means individualised support should be a high priority. Two examples illustrate this:

One student with complete blindness was in year 4 when we first went into lockdown. He'd only just arrived in Australia. He is a refugee from Iraq, so he didn't speak English and he didn't know what braille was. (NSW, Australia).

And another:

[name of student] is not well off at home. He doesn't have his own [online] system set up and his parents are [unsupportive]. So, he's not doing well. (Victoria, Australia).

Cain and Phillips's (2021) recent research on the impact of teaching and learning in COVID-19 times (2021) highlights the loneliness felt by students due to physical separation from their peers and reduced opportunities for social interaction. The students mentioned in these quotes struggled on many levels. Looking at the issues of concern identified in the introduction, an emphasis on relationships would have been of most benefit to the student at this time of abrupt change.

Respondents also noted that the students' emotional and mental wellbeing impacted their participation in learning. One educator explained that some of their students became withdrawn socially and emotionally during this time.

Students appeared distanced from others emotionally. Many students did not have social experiences while absent [from the classroom]. (Pacific SIDs).

As Cain and Fanshawe's (2021) research attests, students with BLV have social and emotional needs for inclusion in addition to physical and academic needs. Having BLV can be an isolating experience. Students with BLV often experience difficulties in forming relationships which detracts from their self-esteem and self-confidence (Oliveira et al., 2018). Remote learning during COVID-19 added an additional barrier to full inclusion for these students.

Provision of Accessible Materials

As classroom teachers scrambled (sometimes overnight) to provide remote learning experiences to their students, unfortunately students' accessibility needs were not a priority.

They were just so overwhelmed that they weren't thinking about the diversity. (Brisbane, Australia).

This is where specialist teachers came to the rescue. Firstly, they prioritised getting hardware into students' homes so they could continue to learn.

I basically just said, 'let's get in and get these kids devices you know ASAP'. (NSW, Australia).

Some specialist teachers took advantage of reduced travel time, to work with teachers to develop skills to ensure online learning was accessible.

I put in a lot of time with my teachers in the beginning teaching them how to make accessible content. I saw a lot of [other educators] running around chasing their tails because all the content was being put on Google Classroom that wasn't accessible. (NSW, Australia).

However, the tight timelines for classroom teachers made it also difficult for some specialist teachers to provide upskilling.

You should see what my young person got for Chemistry! It's like an unmarked PDF book. If given a day with [the teachers] to teach them about vision impairment; how to create accessible content and about the value of accessible content, not just for my young people, but planning for people with you know other print disabilities. (NSW, Australia).

Other studies such as Phillips and colleagues' (2021) underscore that with little preparation, teachers struggled with identifying ways to meaningfully differentiate to meet learners' diverse needs. Teachers were just trying to keep their heads above water and the result was that effective differentiation was minimal at best.

In some Pacific SIDS, the immediacy of school closures acutely impacted accessibility:

Because it all happened so quickly, there was no really coordinated response. The support teachers weren't able to liaise properly with teachers on making accessible documents. Because it shut so quickly, we were not able to have students borrow laptop computers with Braille machines. [Pacific SIDS].

When schools finally reopened, it was not a matter of returning to 'normal'. For some schools in Pacific SIDS, the time spent away from school impacted on students' return.

Most children who were enrolled prior to COVID have come back, but not all. Some children with visual impairment were absent or opted to go back to their home villages and do not have the resources at this time to return to school. (Pacific SIDS).

Access to and Familiarity with Technology

Both the survey and interview data revealed that students' access to and familiarity with digital technologies influenced their participation in learning. One significant

factor was that schools used a multiplicity of learning platforms during remote teaching. The curriculum was provided in traditional forms, such as printed materials or braille as well as via online digital platforms. Some of these platforms were accessible for students with BLV, while others were not.

Participants suggested that many of the students independently used assistive technologies to assist their participation.

Access to learning for any student with a disability has been harder during studying remotely. For students [with BLV], who are well resourced with their own adaptive technology and have all of the [skills], they're reasonably independent and can survive. [Australia, no state identified].

Participants also identified that students who were familiar with, and had access to, the required technology and reliable internet were able to participate in learning.

Students who have relied on technology, that are good at technology, that have their own technology have fared really well. Students that aren't good at technology or don't have access to technology have not gone so well. (Brisbane, Australia).

Geographical location also impacted accessibility:

In Aboriginal communities they might be using a satellite dish or they go to the local library that has a hotspot or something. They don't have good internet. [Queensland, Australia].

Some students who were used to independently accessing materials in an online format required less assistance. It is possible that they fared better than their sighted peers with less experience in negotiating digital technologies.\

The kids [with blindness] felt more confident to get on and do their work. They could adjust things for themselves, and they know how to do that when it's given in digital format. My kids with moderate vision impairment seem to still [choose] hard copy print if it's given to them. (NSW, Australia).

It was also noted that some students actually preferred online learning as they could work at their own pace.

The kids that have good technology skills have loved home-schooling because they have all the technology at their fingertips, and they're not under the pressure of completing their work within the period of a lesson. (Brisbane, Australia).

Research by Cain et al. (2021) noted that students with BLV often struggle to finish class work in the allotted time, and therefore often end up with more homework than their peers which they resented.

Support from Specialist Vision Teachers

Specialist advisory teachers moved their school visits to online sessions. For some, this presented a learning curve.

All my young people [were] probably more comfortable with Teams than me. (NSW, Australia).

The advantage of not travelling to schools meant that some teachers had more time with students overall.

I spent a lot more time with my senior student than I thought I would have, but he needed a bit of motivation to stay on task. So, we actually worked together for almost 2 hours a day. (NSW, Australia).

In the Pacific SIDS surveyed, less comprehensive teacher training and limited knowledge about accessibility meant that specialist teachers needed to approach their work somewhat cautiously:

Regular schoolteachers...they don't see it as their role to deal with special education needs. They leave everything up to the support teacher. So, there's very little interaction between the regular schoolteacher and the student. [Pacific SIDS].

It was collaborative groups such as through SPEVI that provided the greatest support for specialist advisory teachers.

SPEVI started having very regular 'Community of Practice' meetings to try and address some of the concerns. It highlighted that...there were these real concerns with online issues. Now we've learnt things that we can take these into the future. [Victoria, Australia].

Support from families and community

Families also played a crucial role in driving the success of online learning. Our participants identified that the ability of parents to support their children emotionally and academically, their belief in their child's ability to succeed, familiarity with access needs and availability of devices significantly impacted a student's participation in learning.

For the educational success of children with a disability, it's the commitment and dedication, and [the parents'] education level and belief in education. (Australia, no State identified).

As for students' peers without BLV, many parents and carers were impacted by COVID-19 themselves. Some had lost their jobs or were working from home. They found their various responsibilities collided, as they were unable to segment their employee and parent roles. The older students were, however, the less assistance that was required from their families.

Some of them were able to show parents more of what they were learning and doing. (Brisbane, Australia).

Interestingly, some specialist teachers indicated that prior to COVID-19, they had not had any direct interaction with their students' families. Forming these relationships during times of confusion and stress had mixed results.

Some parents were antagonistic and increased their expectations of teachers. (Survey - region unidentified).

Families grew in their appreciation of what teachers do for their children. Many families gained a more realistic idea of their child's impairment because they observed (for example) how close they got to print or screens. (Victoria, Australia).

This prior lack of communication meant that many parents had little awareness about how to support their children when learning from home. They had limited knowledge about accessibility options or were not able to read braille.

The advisory teachers were usually pretty good at reaching out to parents individually. Many commented on how they felt that they bonded a lot more with families during this time. [Queensland, Australia].

The importance of established 'relationships' also featured in this theme.

You need those trusting relationships to be already in place. You can't suddenly appear and say, 'we'll solve this'. (Brisbane, Australia).

There is a large body of literature that supports the needs and rights of parents and carers to be involved in decisions about their child's education (c.f. McDonnell et al., 2021; Hodge and Runswick-Cole, 2008) and that families were an important part of the schooling process.

[It was] quite a learning experience for professionals to realise that we really need to collaborate more with parents. (Victoria, Australia).

Had these relationships been established, teachers, parents and students would not have needed to negotiate this additional barrier to learning.

Preparation for Interruptions to Learning

Our participants related that they were not realistically prepared for the impacts of COVID-19. In particular, pre-closure conversations with classroom teachers about clarity over roles and responsibilities to facilitate learning would have made the transition easier.

More collaboration with parents and caregivers to make sure they have knowledge and skills to support their kids in the next emergency.
Collaboration with schools to make sure they choose an accessible platform

for home learning. And training in tech skills so that they are able to transition [seamlessly] during emergencies to online learning. [Victoria, Australia].

It was also identified that proactive communication between schools, specialist teachers, and families was important to assist parents and carers to support their children when learning from home.

I don't think there was a lot of awareness on how they [parents] would provide assistance for their children. That is one thing that we are working on; to come up with a HomeSchool package with instructions for the parents that are different from the students'. (Pacific SIDS).

Other specialist teachers identified the need to proactively locate devices for students with BLV so they could participate in learning without delay.

So, after COVID finished, I went on a bit of a hunt to say, 'OK, what kids don't have devices at home?' I made that a real priority, as lots of the kids that didn't have that. I worked really hard on [a student's] NDIS support coordinator to make sure that he had funding for [technology]. I used the example of lockdown to press the point that he needed a Polaris at home. (NSW, Australia).

In hindsight, specialists recognised some of the advantages of online learning for students with BLV and that aspects of what was experienced during lockdowns should continue:

I just felt like that was a really great opportunity to do some focused learning. I'm actually thinking I would continue supporting them online because it was just so effective. That's a space that I'm still working on...I felt like that was so much better during lockdown that I'm really missing it. (NSW, Australia).

Lesson learnt, limitations, and implications for practice

COVID-19 has been referred to as a 'once in a lifetime' pandemic that has brought about a unique teaching and learning landscape. The reality is, however, that the world will face ongoing disruptions to learning from future natural disasters and health emergencies. At the time of writing, the Omicron variant presents an increasing risk to public safety. With the possibility of further lockdowns and travel bans, educators are again preparing for remote learning, should the need arise.

Through the preliminary results of this research, we have learnt:

1. That each student's situation is different and that emphasis on tailoring unique responses to individuals is essential for successful inclusion online;
2. That issues of accessibility have not been a priority in emergencies, but that given the opportunity for specialist advisory teachers to work with generalist classroom teachers in non-emergency times, accessibility could be at the forefront of future responses. In line with the tenets of Universal Design for

Learning (CAST, 2021), such differentiation would also be of benefit to other groups of students;

3. That familiarity with, and access to digital technologies was a determinant of success. With preparation, hardware could be available to students as soon as a lockdown was announced, and with instruction in accessible technologies, students could continue their education from home with minimal disruption;
4. That ongoing trusting relationships with students and parents must be established before a crisis hits;
5. That the infrastructure, skills, and familiarity with remote learning has value outside periods of disruption.

One particularly productive question we asked participants was ‘if you could turn the clock back, what would you have done differently? The collective hindsight from all our participants has provided us with a rich set of recommendations which will be explored in a future publication.

Our next steps are to detail the five drivers over four stages of action:

1. ‘Now’: Actions to take when a disruption is theoretical;
2. ‘Readying’: Actions to take when a disruption is likely or imminent;
3. ‘During’: Actions to take whilst the disruption is occurring; and
4. ‘After’. This is a critical stage as it is one of analysis and evaluation and improvement and alterations. This then circles back into the first stage.

Conclusions

The sample size of this study is small, reflecting the limited number of teachers of students who have BLV in Australia and the Pacific. There were additional challenges in conducting research during a time of crisis, as respondents’ capacities were already stretched. Therefore, we intend to follow up with participants in 12 months’ time to gain further insight from their experiences. The full results of this study will be published in a peer reviewed journal article in 2022. In addition, the authors will be distributing accessible resources via the SPEVI network with concise advice about successfully preparing for and moving through times of crisis that necessitate remote teaching and learning. We intend to house these resources on a project website and contribute further research for stakeholders to engage with. The authors welcome contact from anyone involved in supporting students with BLV as we all work together to improve equity of access.

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Appendix 1: Qualitative research questions

Qualtrics survey questions

Demographic questions

- How long have you been teaching students with vision impairments?
- Do you live in Australia, New Zealand, or the Pacific?

* If your country DID NOT implement social distancing or other restrictions due to the COVID-19 pandemic, please answer these questions related to any possible future restrictions:

* If your country DID implement COVID-19 restrictions, please skip to question 12.

1. How do you anticipate COVID-19-like restrictions might impact your teaching and your students' learning?
2. What are your greatest concerns about equity of access to formal education with such restrictions?
3. Who and what might be your key knowledge sources for teaching remotely?
4. What technologies and innovations might you need to engage with to teach successfully?
5. What have you learnt from colleagues or friends in other countries that might inform your experience of COVID-19-like restrictions?

If your country did implement social distancing or other restrictions due to the COVID-19 pandemic, please answer the following questions:

1. Describe your involvement with teaching students with vision impairment.
2. In broad terms, how did social distancing and other restrictions due to the COVID-19 pandemic impact your teaching and your students' learning?
3. How specifically did studying from home impact students' learning in academic terms?
4. How specifically did students studying from home impact their learning emotionally and socially?
5. What changes to learning did students implement themselves?
6. In broad terms, what do you think your students have learnt about themselves as learners during this period?
7. How did the restrictions impact the needs of your students' parents, and communication/collaboration between teachers and parents?
8. What cultural aspects impacted on teaching and learning through COVID-19 times?

9. What changes to teaching have you made to support your students?
- 10.1 What were the issues you were struggling with and needed support with?
- 11.1 Who and what were your key knowledge sources for teaching remotely?
- 12.1 What new technologies did you use and what innovations resulted from teaching through COVID-19 times?
13. What have you learnt about yourself and your teaching during this period?
14. What did you need during the COVID-19 period to successfully implement teaching and learning (resources, technologies, support...)
15. If such restrictions were to occur again in the future, what recommendations would you make for schools, teachers, students, parents and decision/policy makers?

Interview questions

1. Without identifying the student, please demonstrate the impact on teaching and learning during COVID-19 times by relating a story or narrative that provides a holistic case study. For example, describe the student's vision impairment, educational preferences and needs, family circumstances, engagement with technology...)
2. Please provide details of how cultural influences and specifics related to your country's educational context impacted the response to COVID-19 restrictions.
3. What do you wish you would had have known before embarking on remote teaching or social distancing in educational contexts?
4. How was equity of access for students with a vision impairment impacted during COVID-19 times?
5. Please share a story of a successful teaching and learning encounter during COVID-19 times.

Teaching Social Interaction Skills to Students with Vision Impairment: An Integrative Review of Barriers, Enablers and Best-Practice Interventions - Aasha Shaw

Abstract

Students with vision impairment (VI) experience impediments to social interaction. In a recent edition of the British Journal of Vision Impairment, Manitsa and Doikou (2020) published an integrative literature review which examined the literature on social support for students with vision impairments in educational institutions. The authors suggested future research investigating the impact of social supports provided by peers and from school staff on the students learning. This paper endeavours to fill that gap in the research by identifying and analysing the literature related to teaching social interaction skills to school students with VI. The review answered the following research questions: what are the barriers, challenges and limitations to the development of social interaction skills for students with VI?; what types of social interaction skills interventions for students with VI have been trialled globally?; and, what is the relative impact and sustainability of the social interaction skills interventions? An integrative search of the literature identified 28 papers for review. Numerous barriers were found which hinder the attainment of social interaction skills for students with VI. Interventions trialled with students had different aims and methods (impeding meta-analysis) but generally demonstrate positive impacts on social interaction skills. There were two distinct types of interventions – student centred interventions and interventions focused on the social networks of the student with VI. The results of these interventions suggest that a social network approach involving peers may have a more sustained impact on social interactions for students with VI. The findings present an opportunity for more evidence-based research into these interventions with possibilities for a change in practice.

Keywords

Visual impairment, students, social interaction skills, systematic review, school

Introduction

Social interaction skills are commonly accepted as a key component of the Expanded Core Curriculum (ECC) for students with vision impairment. Indeed, the United Nations (2006) in their Convention on the Rights of Persons with Disabilities (CRPD) stated that effective individualised support measures are to be provided in environments that maximise academic and social development, consistent with the goal of full inclusion. Although renowned authors such as Allman and Lewis (2014) state that students with VI need to be provided with explicit instruction by qualified educators in critical areas of the ECC (inclusive of social interactions skills) and educators recognised the ECC as important for students with VI right back in the

1940s and described these as skills that students with VI need to be able access the world around them (Hatlen & Spungin, 2014), authors don't yet seem to agree on best practice strategies to teach social interactions skills to students with VI.

This study aims to collate and analyse the current literature with a view to identifying current practice to enable the development of social interactions skills in students with vision impairment. Kelly (2017) and Sacks (2014) suggest that a socially skilled person (i.e. someone who has high level social interaction skills) is someone who:

- communicates with others, using both their learned non-verbal and verbal behaviour
- uses effective skills that are appropriate to the situation and listener and have a desired outcome
- can read their audience
- shows the ability to say the right things in the right way
- has awareness of others and a sense of self-identity
- uses skills and strategies to interact with other students and adults
- has an ability to interpret social situations, evaluate each social encounter and use a range of social strategies to engage with others

Many researchers agree that students with VI can be disadvantaged in terms of developing social interaction skills because visual observation is difficult and/or impossible (Ely, 2014; Fergusson, 2006; Wagner, 2004; Zebehazy & Smith, 2011). While these skills develop incidentally in most sighted students, those with VI must be supported to develop social interaction skills thus requiring intentional teaching through a specific curriculum framework (Ely, 2014; Fergusson, 2006; Wagner, 2004; Zebehazy & Smith, 2011).

Bloom et al. (2007) identified many concerning and negative outcomes when considering the lack of social interaction skills for students with VI, including exclusion from positive interactions with peers and problems in relationships with their teachers, which can lead to the risk of poor academic achievement. This lack of and/or inability to develop high level social interaction skills may lead to an ongoing negative impact on their life. When participants (students with low vision aged 8-18, their parents and teachers in Victoria, Australia) were asked, "What was the most important outcome from the student's education experience?" social skills were regarded as the most essential life skills to acquire (Cochrane et al., 2008). In addition, the notion that it is harder to progress in life with poor social skills was voiced by all participants the Cochrane et al. (2008) study. Whilst the legislation expects an education system which teaches social interaction skills and the background literature highlights the importance of learning these skills, there is little

published evidence of intervention studies, including their effectiveness or opportunities for improved practice. This paper attempts to fill this gap.

Policy Context

The United Nations (2006), in the Convention on the Rights of Persons with Disabilities Report states that policy and practice should ensure that people with disabilities learn life and social development skills to enable full and equal participation in education. Specific to students with VI, the South Pacific Educators in Vision Impairment [SPEVI] (2016) state that teachers should plan, implement, and review teaching and learning programs to ensure they address the developmental, academic, and social requirements of students with VI. According to the Commonwealth of Australia (2006) teachers must take reasonable steps to ensure that the student with VI is able to participate in the courses or programs provided by the educational institution, and use the facilities and services provided by it, on the same basis as a student without a disability. The Australian Human Rights Commission (2017) Disability Discrimination Act makes it against the law to discriminate against a person because of his or her VI in many areas of public life including in employment, education and getting or using services. A shift from seeing the student as a problem to seeing the education system as a problem may improve inclusion for students with VI (UNESCO, 2005). This review examines the extent to which current practice in the field of social interaction skills in education meets the current legislative policies and proposes recommendations for future practice.

Methods

An integrative literature review identifies, selects, and critically appraises research so that clearly formulated questions can be answered (Dewey & Drahota, 2016). Snyder (2019) suggests that these reviews can be used to create research agendas, identify gaps in research, and/or discuss particular matters.

The search strategy was developed based on the following research questions:

1. What are the barriers, challenges, and limitations to the development of social interaction skills for students with vision impairment (VI)?
2. What types of social interaction skills interventions for students with VI have been trialled globally?
3. What is the relative impact and sustainability of the social interaction skills interventions?

Search Strategy

The two databases (Web of Science and Proquest) were selected as they offer extensive coverage of academic papers on VI topics including social interaction and students. All dates were searched. The following search terms were used: Social*

AND VI* impair* AND youth* OR child* OR students. The asterisks allow variations of the word (e.g.: VI* will allow a search for vision, visual or visually) to ensure broad inclusion of related search terms. The Boolean operators 'AND' and 'OR' were used so that any 'type' of students related word would be captured along with social and VI.

Inclusion and Exclusion Criteria

Studies were included in the review if they were written in English; included students aged between 5 – early adulthood attending school and/or college; were cross-sectional, mixed methods, quantitative and/or qualitative; and there was no restriction on the year of publication. Studies were excluded if the intervention was for students under 5 years of age or adults not in education settings, the article was a newspaper or thesis. One additional paper was included via a hand search of Journal of South Pacific Educators of Vision Impairment (JSPEVI) as the journal was known to the author. The paper met selection criteria, however an extensive database search revealed that JSPEVI is not accessible in any database. A PRISMA flow diagram (Moher et al., 2009) was used to document the inclusion process for this review (see Figure 1).

A total of 145 papers were identified from the review and 104 papers did not qualify for review as they were not relevant to the topic, were not available as full reports online, were not written in English and/or did not incorporate students. A full article review was conducted on the remaining 41 papers and a further 13 did not meet all criteria and were excluded. The result of the review was that 28 studies were eligible for inclusion (see PRISMA flow diagram: Figure. 1).

Data Extraction

A list of potentially relevant articles from two databases was identified and exported/saved into EndNote® version X9. Duplicate studies were removed; potentially relevant articles were screened to confirm relevance for inclusion. Data Extraction Tables were developed to record the key information from each reviewed paper (See tables 1 – 3).

Quality appraisal

After applying the exclusion criteria, 28 articles remained. All articles were then assessed for methodological quality, using the critical appraisal tools developed by the Joanna Briggs Institute (JBI). Separate critical appraisal tools developed by the JBI were applied to the different types of articles in this review, namely text & opinion pieces (McArthur et al., 2015), systematic reviews (Aromataris et al., 2015), cross-sectional studies (Moola et al., 2017), qualitative studies (Lockwood et al., 2015) and quasi-experimental studies (Tufanaru et al., 2017). No articles were excluded during this stage, since all 28 met the JBI criteria. Although more difficult to assess for methodological quality, the text and opinion pieces remained in the analyses as they

provided some practical insights around curricula for social interaction skills for children with VI.

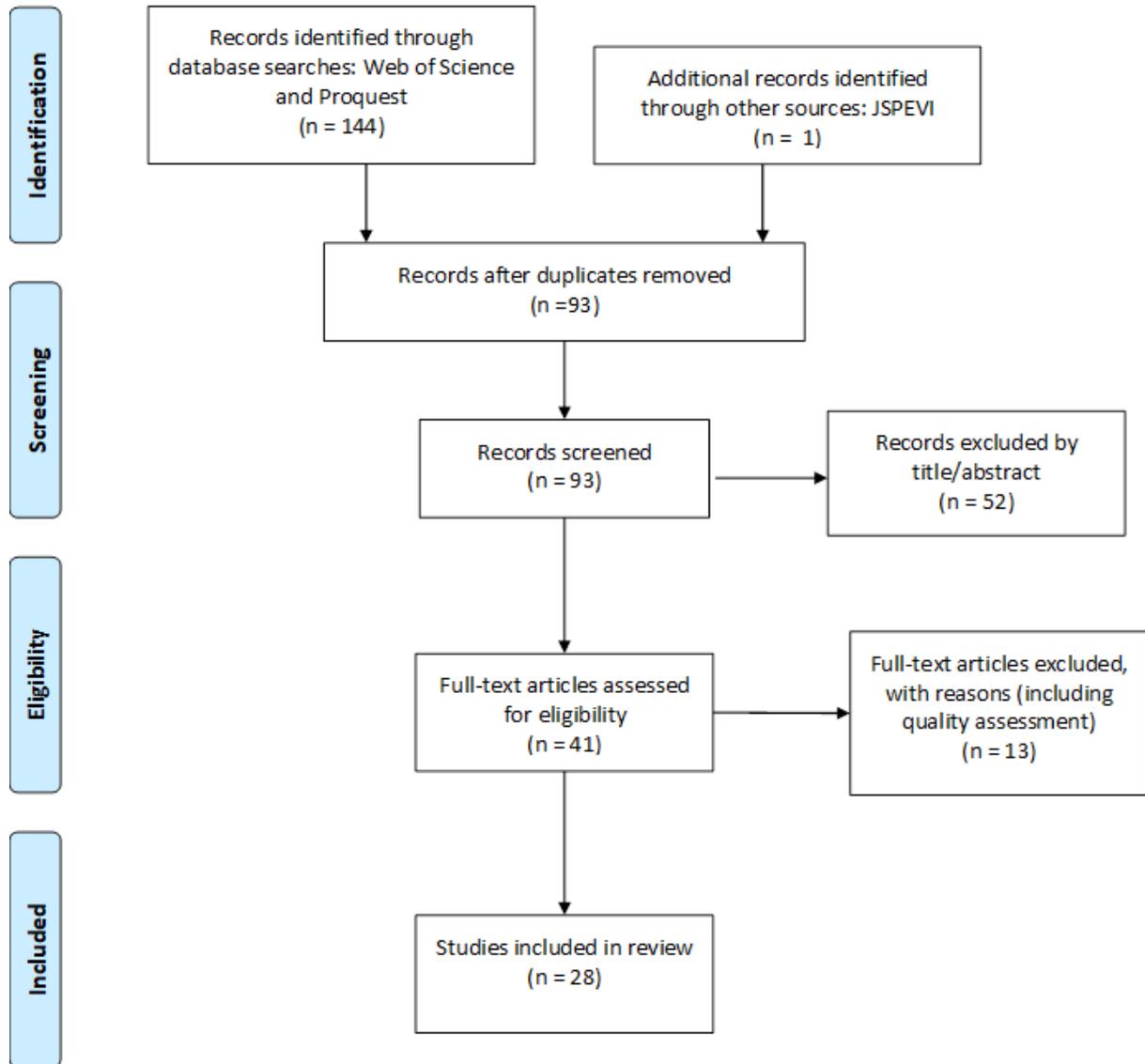


Figure 1 - PRISMA flow diagram

Results

Study Characteristics

The studies in the review were from 13 countries including USA, Spain, Canada, Australia, India, Iran, Turkey, Poland, United Kingdom, Croatia, Malaysia, Netherlands and Germany.

Overview of the Studies

The studies comprised of:

- 3 opinion/text pieces and 2 literature reviews (see Table 1)
- 12 surveys/questionnaire studies and 3 mixed methods (survey, questionnaire, and interview) studies (see Table 2)
- 8 intervention studies (quasi – experimental) (see Table 3)

The papers have been divided into the opinion/text, survey/questionnaire and intervention study categories and reviewed separately as the text/opinion pieces and literature reviews provide an overview of the issues and barriers to developing social interaction skills for students with VI. The survey/questionnaire and mixed methods studies provide some more detailed evidence further supporting the text/opinion pieces on the issues and barriers. Lastly the intervention studies provide some examples of different interventions attempting to improve the social interaction skills of students with VI.

Review of the literature reviews and text/opinion papers (see Appendix A)

The authors of the two literature reviews (Botsford, 2013; Lewis et al., 2014) agreed that students with VI are at greater risk of having difficulties with social interactions. The views of these authors concurs with the authors of the survey, questionnaire and mixed method studies (see Table 2). Botsford (2013) in her meta- analysis, suggests students benefit from developing social interaction skills before reaching the end of high school, while Lewis et al. (2014) report students with VI face many challenges in the development of behaviours that facilitate socialisation.

The text and opinion pieces provide ideas for intervention and suggest that research appears to have focused on two primary hypotheses: (a) that students with VI exhibit a variety of psychological "problems" and (b) that they display "common" patterns of social dysfunction (Beaty, 1992). Explicitly teaching social interaction skills needs to be a vital part of teaching students with VI, not only to meet the legislative expectations but also more personally to increase student's opportunities, self-confidence and self-efficacy (Wagner, 2004). Salleh and Zainal (2010) concluded that social interaction skills interventions are a necessity. Whilst useful papers, it needs to be recognised that these papers are based on opinions and so caution needs to be taken when interpreting their findings.

Review of survey, questionnaire, and mixed method studies (see Appendix B)

The authors of the 12 survey/questionnaire papers all agree that the presence of VI is a significant predictor of difficulties with social interactions (Caballo & Verdugo, 2007; Jessup, 2019; Jessup et al., 2017; Jessup et al., 2018; Pring et al., 1998; Roe & Webster, 1998; Sacks et al., 1998). It should be noted that the three mixed method papers were based on the same study, surveys, and interviews with 12 high school students in Australia (Jessup, 2019; Jessup et al., 2017; Jessup et al., 2018). The interviews revealed that students experienced loneliness regularly at school. Jessup et al. (2017) concluded that students with VI find school more enjoyable when they believe they fit in with their peers although in interviews, students with VI described feeling different from their sighted peers. This is the only existing Australian study that could be located.

Gold et al. (2010) found that students with VI engage in passive and moderately socially interactive activities. While Caballo and Verdugo (2007) state that it is imperative to provide educational programs for students with VI which increase the quality of their social relationships and prevent social isolation, some reports suggest that integrated settings, lack of materials and the absence of a dedicated social interaction skills curriculum means that teaching the social interaction skills is more difficult (Jessup, 2019; Ozkubat & Ozdemir, 2014). Tołczyk and Pisula (2019) found little difference in the self-esteem and coping skills/strategies of youths with VI compared to their sighted peers and suggest that the youths with VI live in residential schools and have access to high level support in all areas of the ECC and this may have impacted the results positively. Zebehazy and Smith (2011) reported that students with VI in integrated settings may require additional support in developing social interaction skills from an early age up into the adolescent years. Severity of the VI may impact social interaction skills with some reports suggested that the more severe the VI the more support the student with VI may require and the lower interactions with peers (Roe & Webster, 1998; Sacks et al., 1998). Gold et al. (2010) reported that youths with VI are at greater risk of not marrying or finding a partner. The survey, questionnaire and mixed method papers suggest that students with VI have greater difficulties in acquiring social interactions skills. The severity of VI and schooling style may further impact social interaction skills, self-esteem, frustration and loneliness.

Review of the intervention studies (see Table 3)

The eight papers reporting on interventions described wide and varied aims, methods, and intervention types. These interventions can be divided into individual deficit/improvement interventions and social structure interventions. Interventions by Jindal-Snape (2004), Jindal-Snape (2005), Peavey and Leff (2002), and Sacks and Gaylord-Ross (1989), all suggest that a sociological approach to intervention may promote longer term sustainability of social interaction skills.

Sociology refers to society, patterns of social relationships, social interaction, and culture that surrounds everyday life (Braham, 2013). In some of these interventions (Jindal-Snape, 2005; Peavey & Leff, 2002; Sacks & Gaylord-Ross, 1989), sighted peers were trained to support the students with VI in social interaction skills development using a variety of strategies including games and activities, trust building and team building. Jindal-Snape (2004) reports on an intervention using self-evaluation and verbal feedback during social interactions and suggests feedback would be more effective had it come naturally, that is, from sighted peers as part of the interaction, rather than as a seemingly judgmental statement from the adult observer. The findings of this study suggest that significant others in the environment usually fail to give this feedback, and they must be trained to do so.

Sacks and Gaylord-Ross (1989) trialled an intervention that compared an intervention that was teacher led with an intervention that was mediated by peers. The changes in social interaction skills of students with VI in the peer-mediated group were much greater than the teacher-led group. The peer-mediated group increased their social behaviours as a result of the intervention and students sustained these behaviours after the intervention. The teacher-led group demonstrated appropriate social behaviours during the intervention but did not sustain them.

In an intervention conducted by Peavey and Leff (2002), students with VI were asked to invite 5 sighted peers to an intervention group. The sighted peers were told it was a group to promote team building, leadership, and friendship. The overall results of the intervention were an enhanced open communication among the students (see Figure 2 for an anecdote from this intervention). The intervention studies which generally focussed on the social interaction skill development of the student with VI rather than changing the social structures had less long term impact for the student indicating that a sociological approach to social interactions skill development could be more sustainable for the student with VI. An anecdote from the Peavey and Leff (2002) intervention:

Mark, a 10-year-old student who was totally blind, was well accepted by his classmates, but was seen as smart and weird. His group consisted of six students from Mark's Talented and Gifted class. Through the group process, some of the "weird" behaviour was addressed. His friends in the group helped him see that he did not need to hide under odd behaviour to resist addressing his vision needs. When Mark needed to remember where he left his cane, he would start talking to his cane. The group members would roll their eyes and say nothing. Because openness was a foundation of the group, verbal communication replaced visual cues. Mark learned that this type of behaviour was not accepted by his peers and quickly eliminated it. Mark's social acceptance soared as the group coalesced. (p. 810)

The group of sighted students and one student with VI mentioned in the anecdote worked on trust exercises and thought-provoking activities where they expressed their individuality and improved their leadership skills. Although the activities were introduced by the adult facilitator, they were reinforced by the peer members and resulted in improved connectedness and communication among the students (Peavey & Leff, 2002).

Discussion

As a teacher in the field of VI for the past 17 years, the literature review confirmed the authors feeling that little has changed in social interaction skills interventions, resulting in students struggling to make and keep friends, socialise appropriately, build networks, and interact with others. The purpose of the review was to evaluate the quality of the research and the effect of interventions, with the aim of summarising the literature on social interaction skills for student with VI. Critical analysis of the papers found an abundance of literature on the difficulties in acquiring social interaction skills, however there is a distinct shortage of intervention studies of social interaction skills making it difficult to pontificate best practice for students with VI.

Lewis et al. (2014) suggested that due to the lack of intervention studies and the few research-based strategies to facilitate the development of social interaction skills, more research, and research of higher quality, is needed. Most of the studies reviewed for this paper were from a psychological perspective and tended to focus on the “problem” of the student with VI, attempting to find “solutions” to their behaviours. The small number of studies reporting socially oriented interventions suggested increased and sustainable outcomes in social interaction skills for students with VI (Jindal-Snape, 2004, 2005; Peavey & Leff, 2002; Sacks et al., 1992).

Wagner (2004) offered a potential framework for a more socially oriented intervention which acknowledged the difficulties of the often small number of students within studies, the variations in VI, acuity, additional disability etc., and suggested ways to overcome these issues and support students in the development of social interaction skills. The framework is a useful guide for teachers and school staff, parents and peers in understanding the social implications of VI and a more inclusive social setting. In the opinion of the author this type of framework meets the Australian legislative requirements by ensuring full and equal participation for students with disabilities including VI (Australian Human Rights Commission, 2017; Commonwealth of Australia, 2006; South Pacific Educators in Vision Impairment (SPEVI), 2016; United Nations, 2006). Wagner (2004) suggested a conceptual framework curriculum which looks to incorporate more than the traditional contents of social interaction skills programs for students with VI. The curriculum suggested interventions that strengthen from an 'outside point of view', through techniques that

provide information, strategies, and hands-on experiences within the school setting. These sociological techniques, as discussed earlier, are showing promising results in small scale interventions for sustained social interaction skills for students with VI. Although Wagner appears to have encompassed the notion of individual and social structures with this curriculum, it was not tested as part of the 2004 paper. Extensive database searching shows no evidence of this curriculum being implemented.

Conclusion

The findings from this literature review indicate that, while there is much evidence of the barriers, challenges, and limitations to developing social interaction skills for students with VI, there is little research or agreement regarding the best practice for teaching these skills.

Nearly 30 years ago, Sacks et al. (1992) suggested that although other disciplines have designed comprehensive social interaction skills interventions based on theory and research, practice in the field of VI has been somewhat of a folk art, in which training techniques and approaches have been passed along from one professional to another. This literature review suggests that very little has changed in the past 30 years as there is still no comprehensive training technique for the teaching of social interaction skills to students with VI based on theory and research.

The need for additional research and data collection in the area of social interaction skills for students with VI is therefore clear, particularly if educators have a commitment to a society in which students with and without VI can interact together as highly social people (Beaty, 1992) and educators are committed to the legislative, administrative, and organisational policies and processes.

The current research conceptualises the student with the VI as having the 'problem' with developing social interaction skills. Considering the human rights approach to disability that has been adopted worldwide since the United Nations enacted the United Nations Convention on the Rights of Persons with Disabilities in 2006, it is surprising that such a view persists in the literature. The author's personal experience, along with the current literature, suggests that several key questions could usefully guide future research into a more sociological/holistic approach to the acquisition of social interaction skills. These questions are as follows: Can the inclusion of sighted peers in interventions be beneficial? What are the impacts of these interventions on students with VI and what is the impact on their sighted peers? Do these interventions deliver the benefits assumed by the teacher mediators? Which model of intervention is most effective to support students with VI to develop social interaction skills? It is to these research questions that future studies should focus.

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Appendix A. Data extraction Table: Text/Opinion Papers and Literature Reviews

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
Beaty (1992) USA	Text/Opinion. Comparison of interviews and tests of young people with VI (VI) from papers from 1936 – 1992	Students (ages not outlined)	No overall agreement on the self-esteem, self-concept and social interactions of students with VI. Question of validity of some tests not specific to students with VI.	More research is required in order to better understand the social implication of VI.
(Botsford, 2013) USA	Literature Review/Meta-Analysis of the National Longitudinal Transition Study-2 (NLTS2) pertaining to youths with VI.	1250 youths with VI in grades 7 – 12. Data collected every 2 years for 10 years from students or parent.	Specific and dedicated social interaction training in high school is of benefit to youths with VI.	Further quantitative research would be of benefit.
(Lewis et al., 2014) Various countries	Literature Review relating to: Independent Living Skills, Self-Determination, and social interaction skills.	Multiple populations based on individual papers.	Extensive literature review resulting in analysis of 10 papers relating to interventions in social interaction skills.	Low incidence of VI and the large variety of VI and acuity makes intervention difficult. Most studies are interviews/surveys however this is not necessarily improving the strategies educators are using.
(Salleh & Zainal, 2010) Malaysia	Text/Opinion	Not recorded	Overview of how students with VI learn social skills with suggested interventions based on the work of Sharon Sacks.	None recorded
(Wagner, 2004) Germany	Text on an intervention idea	Not recorded	Evidence based paper outlining a curriculum to develop social competence.	Future studies to put this curriculum into practice.

Appendix B. Data extraction Table – Survey/Questionnaire/Mixed Method Studies

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
(Caballo & Verdugo, 2007) Spain	Survey of teachers observed and recorded the social interactions of youths with VI and youths with typical sight from the same classroom.	128 students aged between 4 – 18 years. 64 with a range of VI and 64 with typical sight.	Youths with VI are at risk of having difficulties with social interactions.	Educational programs to promote social interaction skills are imperative.
(Gold et al., 2010) Canada	Survey using the Students Lifestyle Questionnaire.	Survey of 328 participants with VI aged 15-21 and 22-30.	Youths with VI are less likely to marry or finding a partner partly due to experiencing fewer social interactions/opportunities.	Comparison to a sighted cohort, implications for educators in supporting the social interactions of youths.
(Movahedi et al., 2011) Iran	Survey using Weitzman's Social Maturity Scale. The questions are based on a study of social growth in teenagers. The scale gives a teenager an indicator of where they fit on the social development scale.	107 male participants with VI aged 13 – 19 (51 involved in goalball and 56 non active).	Student-athletes with VI have better social growth than non-athletes with VI. Sport provides social interaction and social development opportunities and should be encouraged by parents, educators and coaches.	None Recorded
(Oh et al., 2004) USA	Report using data collected via video of	12 participants with VI	Participant's age impacted level of engagement in PE lessons. Data	Further studies investigating the social inclusion of youths with VI in

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
	students aged 6-12 engaged in PE lessons		were collected in a special school so is impacted by the exclusion of sighted peers.	mainstream and specialised schools when included in PE lessons.
(Ozkubat & Ozdemir, 2014) Turkey	Compare the social skills of five groups of students using the SSRS – Social Skills Rating Scale. Students with VI attending inclusive education schools, students with VI attending schools for the blind, students with intellectual impairments attending inclusive education schools, students with intellectual impairments attending segregated special education schools, and typically developing students.	169 students aged 7 – 12 years (32 youths with VI in mainstream school, 33 students with VI in specialist school for students with VI)	Students with VI in integrated settings have better social skills than their peers in specialist schools. Teachers report that lack of materials and support mean that teaching these skills is difficult.	Further research into the variables in teaching social skills is needed.

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
(Papuda-Dolińska, 2017) Poland	Survey comparing social functioning of students with VI in Poland in special, integrated and inclusive school settings.	90 participants aged 8 – 12 years (30 participants from each school setting.	There is no evidence that there are better school setting for ALL students with VI, some models and some students will succeed while others will fail. However, regular schools, teachers and students must be ready for diversity to ensure success.	Further investigations including higher numbers of participants and increased variables is required.
(Pring et al., 1998) UK	Survey of student participation when a story is read to a student and their answers about social cognition are recorded (eg sarcasm/misunderstanding).	32 participants (16 blind/16 sighted – control group) aged 9 – 13 years	Stories were read to students and questions asked. The first questions ensured that the students comprehended the story, and the next question required a response about the mental state or physical justification of the person in the story. Students with VI got significantly fewer mental state questions correct and got physical justification questions wrong less often suggesting that youths with VI do not pick up on non-visual social nuances.	None recorded
(Roe & Webster, 1998) UK	Survey of young students with VI in play with peers with	20 students aged 3 – 9 years (8 blind	The more severe the VI – the higher the intervention by adults and the least interaction by peers.	Individual strategies for individual students are required.

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
	comparison to literature (Book).	and 12 low vision).		
(Runjic et al., 2015) Croatia	Survey of 39 parents of teenagers (13 – 17 years old) linking social skills deficiencies and behavioural issues in regular and special school for students with VI.	Parents of 39 teenagers with VI.	Youths who have better social skills are better behaved. Cooperative and responsible youths with VI have fewer problems with behaviour.	Systematic support for youths with VI in the area of social skills is needed.
(Sacks et al., 1998) USA	Study 1: of participants and parents/time diary of typical days.	48 participants aged 15 – 21 years (16 blind, 16 low vision and 16 sighted).	Sighted participants spend more time with peers than youths with VI. Sighted participants were 4 times more socially active than the low VI participants and twice as socially active as the blind participants.	The sample size is small so replicating with a larger group could be useful.
	Study 2: in-depth observation.	3 participants with VI.	Participants preferred to socialise with VI peers, opportunities to participate in social interactions were limited and youths with VI had to work hard to sustain friendships.	
(Tołczyk & Pisula,	Survey of 50 youths with VI and 50 youths with typical vision comparing	100 participants – 50 youths with VI (most living in	There were very little differences in the self-esteem of students with or without VI and very little difference in	Further investigation of students who do not live in residential

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
2019) Poland	self-esteem and coping strategies.	residential schools for youths with VI) and 50 youths with typical vision.	the coping skills/strategies of youths with or without a VI. Youths in residential schools have access to high level support in all areas of the ECC which may impact results positively.	schools and who attend mainstream schools is needed.
(Zebehazy & Smith, 2011) USA	Survey of data from the NLTS2 (wave 1) data.	National Longitudinal Transition Study 2 (NLTS2) 686 participants with VI aged 13 – 16 compared to participants with other disabilities.	Compared data of participants with VI to participants with other categorised disabilities. Results indicate that participants with VI are more social competent than their peers with other disabilities.	Comparisons of social skills of participants with VI with sighted peers.
(Jessup et al., 2017) Australia	Mixed Method: (a) the Psychological Sense of School Membership (PSSM) questionnaire, (b) experience sampling (ESM) surveys, and (c) individual interviews.	12 participants aged 13 – 17 (6 males) with VI. 4 with additional disabilities.	Although youths with VI felt as if they were generally included, they felt very different to their sighted peers. They were frustrated by 'doing nothing' e.g. when set class activities such as PowerPoint, video etc are inaccessible. Many found eating time a lonely experience.	Purposefully designed groups of students with and without VI could support the social interaction skills of students with VI.

Authors/ Country	Type/details of Paper	Population	Key Findings	Recommendations and suggestions for future
(Jessup et al., 2018) Australia	Mixed method: The Psychological Sense of School Membership (PSSM) and interview.	12 participants aged 13 – 17 (6 males) with VI. 4 with additional disabilities.	Many students with VI are struggling with social interactions in high school. Concerning links between isolation and long-term mental health and wellbeing.	School structures may need to be altered to better support the ECC skills required especially in social interaction.
(Jessup, 2019) Australia	Mixed Method: (a) the Psychological Sense of School Membership (PSSM) questionnaire, (b) experience sampling (ESM) surveys, and (c) individual interviews.	12 participants aged 13 – 17 (6 males) with VI. 4 with additional disabilities.	Students with VI feel socially isolated in their mainstream school. The 2 main findings were: the links between self- determination and social inclusion, and the social challenges of students with VI and additional disabilities.	The impact of the environment (positive and/or negative) on the students with VI. How interventions are best directed to ensure self-determination and social interactions are increased.

Appendix C. Data extraction Table – Intervention Studies

Authors/ Country	Type/details of Paper	Population	Intervention details	Key Findings	Recommendations and suggestions for future
(Ivy et al., 2016) USA	Intervention: Use of MotivAider® to assist/measure 3 students with VI to chew with mouth closed during eating.	3 participants (aged, 11, 12, 14) living in a residential school for youths with VI.	Initially an explicit instruction lesson and then MotivAider® (small vibrating box) that vibrated regularly as a reminder to chew with mouth closed.	There was an abrupt change in behaviour following the explicit instruction lesson. Following the introduction of the MotivAider® chewing with mouth closed improved. As time frame of vibration increased the mouth closed chewing remained improved.	Use of the MotivAider® in a variety of social situations to collect data on its use.
(Jindal-Snape, 2004) India	Intervention: Observation of 2 students with VI in separate social situations over several sessions. Students were asked to self-evaluate, hear the observer evaluation and adjust behaviour.	2 girls with VI aged between 9 – 11 years.	Small group social situations 1 student with VI, 2 sighted peers. Students with VI asked to describe social behaviour being practiced, then self-evaluate the results after a given time period. Observer also provided evaluation.	Self-evaluation is a valuable tool in students with VI evaluating themselves in social situations although at times they may 'read' the social situation incorrectly and assume they are going well when in fact they misread the situation. This requires feedback from the sighted person – most likely the person who is involved in the situation.	Significant others in the environment usually fail to give feedback, and they must be trained to do so as this may improve the social skills of students with VI.
(Jindal-Snape,	Intervention: Observation of 1	1 boy with total	Student was asked to self-evaluate, hear the evaluation of peers	Feedback from significant people in the environment is a	Sighted peers need to understand why students

Authors/ Country	Type/details of Paper	Population	Intervention details	Key Findings	Recommendations and suggestions for future
2005) India	student with VI in social situations over several sessions.	blindness aged 9 years.	and adjustment of behaviour was observed.	way to help students who with VI to develop social skills that require visual cues. These people should try to provide it accurately and in an appropriate way.	with VI do not use visual cues.
(McMahon et al., 2019) USA	Intervention: Data collected 3 times from 1989 – 2010 through interviews and an evaluation instrument during PE camps for youths with VI.	671 participants from 12 camp locations across America.	PE camps using AccessSports Model (ASM) for teaching PE skills to youths with VI.	Youths improved their PE skills and generalised these skills into their community post camp – improving self-perception.	Advisory Teachers VI – could use this data to argue for adapting sports to include students with VI in their usual school or community.
(Peavey & Leff, 2002) USA	Intervention and survey Pre and post survey of 5 students with VI aged 10 – 17 years	5 participants with VI	Intervention- small group activities (1 student with VI with 4/5 sighted peers) to build trust in the group. Other group members were chosen by the youth with VI. Sighted participants were asked to join the group to promote team building, leadership and friendship.	Small group activities building trust allow for students with VI to feel comfortable to talk about their VI and enable sighted peers to talk about negative social behaviours that impact friendships/relationships.	None Recorded

Authors/ Country	Type/details of Paper	Population	Intervention details	Key Findings	Recommendations and suggestions for future
(Sacks & Gaylord-Ross, 1989) USA	Intervention and survey Direction of gaze, body posture, positive social initiations, joining in group activities, sharing in group activities.	15 students aged 8 – 12 years. 10 with VI, 5 sighted in 3 groups - peer mediated, teacher directed and control (sighted).	Peer mediated group- 12 sessions across 4 weeks conducted by same age sighted peers. These 2 peers were trained by an adult prior to each session. Sessions were usually a game or activity and were generally unstructured and individualised for each student with VI. Teacher directed group – 12 sessions across 4 weeks conducted by a teacher – role play, role modelling, rehearsing.	The changes in the peer-mediated group were greater than the teacher-directed group. The peer-mediated group increased their social behaviours through the intervention and sustained these changes after the intervention. The teacher-directed group improved their social behaviours in training but did not sustain them.	None recorded
(Stockley, 1994) UK	Intervention and survey Social Skills intervention with 9 students with VI in a residential school. Pre and post interviews.	9 students with VI.	Yearlong social interaction skills training “Social use of Language Program” based on role modelling and group activities.	Dedicated lessons utilising a training course improved participant feeling of confidence in their ability to participate socially.	Small numbers of participants showed positive outcomes. Further participation in this course would add to the evidence. Training in mainstream schools could be implemented.

Authors/ Country	Type/details of Paper	Population	Intervention details	Key Findings	Recommendations and suggestions for future
(Verver et al., 2020) Netherlands	Intervention and observation using Individual Social Behaviour Scale.	36 participants aged 4 – 11 years, 18 with VI and 18 sighted.	Use augmented toys (with sound) to engage participants in play and social interaction.	The augmented toy meant that both the participant with VI and the sighted peer's joint attention during parallel play was on the toy. This seemed to be instead of or at the expense of cooperative play with each other.	Further studies could investigate the effect of sound augmentation on the complexity of play.

Developing Tactile Books for Children with Vision Impairment in Vietnam - Thanh Trinh Thi Thu

Abstract

Every child with vision impairment (VI) has right to access books to learn about the world and develop language as well as emotion. The lack of tactile books in Vietnam led to the project "Tactile books, made for sharing". This article focuses on describing the enjoyment of reading tactile books and how to make a progressive range of books, from familiar stories with simple objects up to tactile representations of difficult concepts outside of children's experience.

Keywords: children with vision impairment, tactile books, object books, tactile pictures, Vietnam

Background

Vietnam is a country with a large population with disabilities. The rate of children with disabilities is increasing. However, the conditions of facilities that meet the needs of learning and play are limited. According to census data, there are 1,329,000 children with disabilities, in which 13.73% children with VI, amounting to 182,472 children (UNFPA, 2011). There are only 34.01% of children with disabilities aged 2 to 5 who have any books, comics, and toys. The rate of children with disabilities aged above 5 that have books, comics, and toys are likely to be less (UNFPA, 2011).

In Vietnam, teachers and specialists tend to focus on learning materials for mathematics, geography, and other core curriculum subjects. Tactile books are emerging both in research and practice and are adapted or designed to meet the needs of touch. However the tactile pictures are very complex and difficult for many children to interpret, especially those with additional disabilities, and seem not to focus on the enjoyment of reading.

Tactile books made for sharing

We named our project 'Tactile Books Made for Sharing' because we want to make 100 books to start to fill this gap in provision of tactile books for children with vision impairment. We will share the books by opening a Tactile Book Library.

We took time at the beginning of our project to collate and consider relevant previous research and models of good practice. The Typhlo and Tactus Guide to Children's Books with Tactile Illustrations (2000-08) (Claudet & Richard, 2009) was particularly useful in informing us about principles of good design that we have strived to adhere to. These principles are very important however this article will focus on other aspects highlighted in our aim: To develop a system of making a **progressive range of tactile books** for young children with VI to **enjoy**, including children with VI and multiple disabilities (MDVI).

The key words in our project aim will be discussed below but in reverse order. It is hoped that along the way it will have become clear why we named our project, 'Tactile Books, Made for Sharing', as 'sharing' is the common thread running through the following discussion.

Making tactile books for children with VI to enjoy

Italian Giancarlo Abba (2009) inspired us when she wrote, "The book for a child is to be thought of as a treasure chest of words that initially comes out of the pages, almost by magic, where each word is a new jewel enhancing his/our mind. . . Even for a child who can't see and for the visually impaired child a treasure chest exists or must exist." (p. 24). It was striking that the words are the treasure, not the pictures! As tactile book makers we may be inclined to be so focused on making the pictures that we forget this salient fact. The pictures transform the words into jewels.

Most makers of tactile books are either parents, teachers of vision impairment, researchers, or librarians, not authors. Writing stories for children is a highly skilled and creative. Hladíková (2014) states the "vocabulary of pictures books is usually very "rich, evocative, and engaging" according to Pierce (2010). Many times its quality is much greater than language used in chapter books . . . "an author must craft each and every word, sentence and paragraph with care," being exposed to such a quality of language aids significantly the growth of the children's language skills (Pierce 2010)" (p. 20).

If we are not authors, then we have three options. Firstly, we can adapt picture books written for sighted children; secondly, we can invite children's authors to contribute stories to our project or thirdly we can develop our own story writing skills with an awareness of our shortcomings and a desire to improve. We must learn to take as much care to craft the words we write as we do the pictures we make. We hope the words we write will touch children's feelings, even make them laugh. We particularly want our stories to have a satisfying or surprising ending. We are eager for children to so enjoy the story that they will want to hear it again and again and even read it themselves.

Firstly, stories should be in the child's direct experience which naturally means in the child's own culture, however, there are very few children's books written by Vietnamese authors that reflect everyday experiences of young children. One such story is 'Trai Tim Cua Me / Mother's Heart' by Hoai Anh (2015). It is about everything a mother and young daughter like to do together, from getting up in the morning to going to bed at night. We approached the author, and she not only adapted this book but wrote two more stories for our project, both with very interesting vocabularies.

If words are to be jewels, they must do more than just label things and aid recognition, however important this is. Words stir feelings, ignite the imagination and later are a catalyst for abstract thinking, so tactile pictures are vital to facilitate these process of growth in the minds of children with visual impairment.

Abba (2009) says that by making tactile books we are promoting the development of 'clever hands'. She goes on to say, "In a tactile book the child meets the reality that he/she finds in it that we have to 'pull out'." (p. 28). The adults making the books, as well as the adult sharing the book with the child, need to expect imagination to be sparked at some point and be looking out for opportunities to pull it out or nurture it and we believe this includes children with additional disabilities. Abba (2009) goes on to say, "We are dealing with a constant game alternating reality and imagination, which helps the child to develop multidimensional thought. This is why it is so important to couple the stories also with a tactile image supported by the experience." (p. 29).

Abba (2009) also talks about the importance of play because play is where reality and imagination first meet. We hope even our first stories can be either a springboard or a follow-up to imaginative play. Even our first object books are designed to evoke memories and feelings but also lead to imaginative play. For example, at the end of the book, 'Summer is Here', there is a typical Vietnamese raincoat for the child to remove from the bag and put on. It is hoped that this will lead to pretending to go out to play in the rain, stamping in puddles and so on.

Furthermore, we are exploring providing hand puppets with some stories to stimulate play around the story. It has been our experience that some children without vision have found it easier to connect with a hand puppet than a soft toy, perhaps because the adult and child are sharing the experience directly through the puppet.

A progressive range of books.

From the very beginning of our aim has been to provide a progressive range of books. As Blok and Lanners (2009) point out, 'A small child with little or no sight is unable to spontaneously recognize and symbolize the real world around him; initially at least, he needs guidance and must be taught to systematically compare reality and the image that represents it . . . It is fundamental that tactile books match the child's level of knowledge and understanding so they allow him to consolidate, broaden and integrate his experiences.' (p. 31). Our books aim to match the child's level of development of symbolic understanding by providing four levels as follows:

Level A: Object Books: Real everyday objects linked together by a theme or a very simple story.

Level B: Object Books with one or two first tactile pictures that can be compared with reality, illustrating simple stories about familiar experiences.

Level C: Stories with a number of tactile pictures that further develop the child's symbolic understanding using a range of concepts but still based on familiar experiences.

Level D: Stories which may be outside the child's direct experience, with some more imaginary themes and some abstract pictures.

The child's journey into literacy starts before Level A with real life experiences and real objects. 'Experience books' are when the adult and child share an experience, to collect objects with meaning and memory and bring them back to home or school, to make a book together. It is not possible to include experience books in a library because they are so personal to one child's unique experience so we decided to make some 'empty books' that an adult could help a child to fill, according to a theme. The book has empty pockets or bags for the child to fill with real meaningful objects, to make the book personal. One such theme is 'My Home' where each pocket will have something interesting from a different room in the house.

Level A Object Books introduce objects that do not belong to the child personally but they will be common objects in Vietnam. Attaching an object to a page makes it more difficult to recognize as it loses its most meaningful feature, for example a sock or hat can no longer be put on. Therefore, there is a progressive range within Level A: initial books have objects attached by Velcro so that they can be removed and fully explored by the child. Later books have more real objects sewn or stuck onto the page, so the child has to learn to recognize them increasingly by the shape and texture of the object. This will prepare them for recognizing a tactile picture at the next stage.

McLinden (2012) outlines a framework for the development of 'exploratory procedures' and the role the child's adult partner can play in "mediating haptic learning experiences to ensure they are appropriately structured and progressive" (p. 129). McLinden particularly focuses on children with VI and additional disabilities. Our assessments and guidelines follow this framework at the pre level A and levels A and B. Our books are 'made for sharing' to emphasize that the adult has a vital sharing role to nurture these abilities in all children with VI. The adult will be guided to keep their hands present on or near the page, showing interest if the child is independently discovering something about the object but ready to direct the child's hands towards a particular feature if they are initially passive.

Level B Object Books which introduce one or two first tactile pictures that enable the child to compare the reality with a tactile representation for the first time. The real object being represented in a first tactile picture needs to be either included on other pages in the same book or provided in a bag to accompany the book or found readily in any typical home. For example, a simple story about hats has real hats sewn onto the first few pages leading onto the first pictures of a hat. Blok and Lanners (2009) point out that "The adult who assists the child as he reads his books can also encourage his perceptive analysis; but most important of all, he will help him grasp the link between the real object and its representation" (p. 34).

At level B the child will meet pictures representing parts of the human body for the first time, particularly the face. The adult will be guided to provide the child with supplementary play experiences such as making a face from playdough together.

Level C books will have more tactile pictures, still representing familiar experiences, but the real objects will not always be at hand. The child will have to rely on memory and understanding to make connections, such as a trip to the market and pictures of vegetables.

Dolls have been included in some early Level C books to help children learn to recognize different ways a person can be represented. Other books represent people in 2D form and the adult will need to support the child verbally and by touch if they are to make the connection.

As the child progresses through level C different concepts in symbolic understanding can be developed through the choice of different books. One of our books shows how different facial expressions can be portrayed. Another shows how different directions of movement are depicted such as 'up', 'down' and 'across'. In addition to concept development the books at level C with accompanying guidelines will support the progression of fine motor and early Braille tracking skills.

At level D the stories are not all based on familiar experiences for Vietnamese children. The stories become a means of developing children's understanding of the wider world or objects in their environment but not possible to explore by touch such as a cockroach or mosquito. Some pictures attempt to illustrate concepts that are very difficult to depict in tactile form such as water. One story about fishing has a picture of a deep lake made out of layers of fabric for the child to put their hand in and tiny beads and plants represent the bed of the lake. The child will also meet some abstract pictures. For example, in two pictures in the book 'Little Red Riding Hood', the wolf is represented by a triangle of fur, rather than the true shape of his body. Other stories will be entirely imaginative such as about pirates or monsters. All the stories will potentially lead into more complex imaginative play.

Having a progressive range of books means that the children will have books suitable for their current level of development with the clear expectation that they will continue to make progress and move on to the next level.

Besides, a progressive range of books focus efforts on teaching the Braille characters, especially how to write them. We hope that by providing a source of enjoyable and imaginative stories, brought to life by tactile pictures, that children will be inspired to learn to read Braille and parents and teachers will be inspired to teach them.

Conclusion

This is the first research about tactile books for children with vision impairment in Vietnam. The research based on previous guidelines from the world and focus on the enjoyment of reading as well as sharing books with family members, peers through our full range of books so all children with vision impairment in Hanoi and beyond can develop a lifelong love of stories and reading. In the final stages of our

project we will share our system of making the books so that throughout Vietnam more libraries will spring up to make tactile books for children with vision impairment.

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Touch Reading 3D Prints - Leona Holloway, Kate Stephens and Ramona Mandy

Abstract

Many aspects of education rely on diagrams, pictures and physical objects for representing pedagogical concepts and information. For a child with blindness or severe vision impairment (BVI), visual mediums are often inaccessible. 3D printing offers a new method for conveying visual information to these students in a format that is relatively cost effective, moderately easy to prepare, and provides access and information without ambiguity.

Based on five years of observations and experience of adults who are BVI using 3D models, we offer three basic principles for understanding 3D printed models through touch. These principles are intended to provide support and assistance to teachers of students with BVI that will enable them to successfully access 3D printed models as an engaging component of the student's education.

Keywords

Blind; Low vision; Touch perception; 3D printing; Education; Pedagogy

Introduction

3D printing is a rapid prototyping technology that offers a new format to convey pedagogical visual information to students who are blind or have a severe vision impairment (BVI). 3D model files are made into 3D objects using a 3D printer, usually building up one thin layer at a time with plastic materials. 3D printing is affordable, being similar in cost to swell paper diagrams for both the equipment and materials, and 3D printers are available in many schools. Moreover, 3D models are generally more easily understood by touch compared with tactile graphics (Braier et al., 2015; Hasper et al., 2015; Holloway, Butler & Marriott, 2018; Klatzky, Lederman & Metzger, 1985) and they are also more inclusive, being engaging for both students who are BVI and their peers (Buehler et al, 2015; Siu, 2014). However, as 3D printing is a new technology, the community is in the early stages of establishing guidelines and practices for its use in the classroom.

Tactile graphicacy is the ability to read and understand graphics by touch (Curtin, Holloway & Lewis, 2019). Touch perception allows access only to that which is directly in contact with the body - in the case of reading tactile graphics and 3D models, this is almost always the fingers and hands. Touch perception relies on movement (Gibson, 1962) and different hand movements are required according to the object being felt and the information being sought (Lederman & Klatzky, 1987). Each piece of information acquired through sequential exploration must then be synthesised to understand the whole (Revesz, 1950). Thus, tactile graphicacy is a learned skill that requires directed hand movements, tactile discrimination skills, and

an understanding of the conventions of tactile graphics. Instruction and training on optimal movements and strategies for tactile exploration improves tactile reading performance (Hatwell, 2003). For example, successful touch readers find a point of origin, trace the shape and return to the point of origin, using the fingers but not the flat of the hand (Berl, Butterfield & Murr, 1976). 3D models differ from tactile graphics in a number of ways. Therefore, it can be expected that specialised techniques will be required for touch access to 3D models, and that skills in interpreting 3D models by touch can be improved with teaching and support.

This paper draws on five years of research and experience sharing 3D models with touch readers (Butler, Holloway & Marriott, 2019; Holloway, Butler & Marriott, 2018; Holloway et al., 2019a; Holloway et al., 2019b; Stephens et al., 2020). In the roles of researchers (Holloway and Stephens) and touch readers (Stephens and Mandy), attention was paid to hand movements during the exploration process, what parts of the 3D models were most salient, and what was missed without prompting. Based on this research, three key principles are proposed for presenting and interpreting 3D models that are intended as an alternative to accessible graphics for illustrating visual aspects of the curriculum. It is anticipated that these principles will assist teachers of students who are BVI to provide the support they need to successfully access 3D printed models, and perhaps even create their own, as an engaging component of their education.

Principles

1. Know what to expect

Context is essential to understanding. Quality verbal or written descriptions assist students who are BVI in their interpretation of tactile graphics (Corley & Pring, 1996; Zebehazy & Wilton, 2014). Just as it is common courtesy to identify yourself when speaking with someone who is blind rather than making them guess (Everyday Sight, 2018), making a student guess the object could create an embarrassing and uncomfortable experience, leading to a reluctance to pursue further exploration. While 3D models are generally easier to understand by touch compared with tactile graphics (Braier et al., 2015; Hasper et al., 2015; Holloway, Butler & Marriott, 2018; Klatzky, Lederman & Metzger, 1985), a detailed description is still invaluable (Mayo, 2004; Millar, 1999).

Description

When 3D models are provided to students who are BVI, teachers and support staff should also give an explanation to the student of how and why the model fits into the matter under discussion.

When first presenting a 3D model, provide a description of the model including the title, an overview, orientation, important features, and how the model differs from the original object.

For example:

'This is a model of the peak of Mount Everest. A braille label is given near the base, facing south. The model shows an area of approximately 25 kilometres along each side. Mount Everest is 8.8km above sea level; this model shows only the very top portion.'

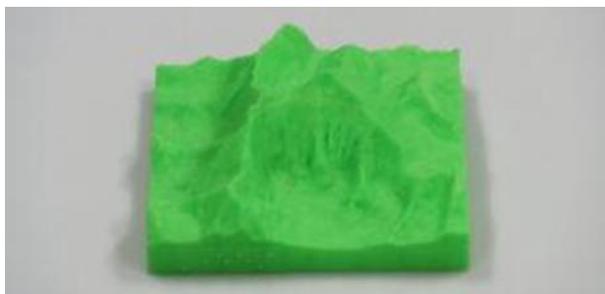


Figure 2 - 3D Model of the Peak of Mount Everest

Title and overview: Regardless of the format or subject matter, guidelines for providing non-visual access all agree that descriptions should start broad, with the general topic, before moving on to details (Alonzo, 2001; Round Table, 2021b; UKAAF, 2012). The title of the model may be sufficient, but more often, some context or the arrangement of the object(s) may also be required. For example, “A preserved scene from Pompei with three human figures on the ground, surrounded by two walls” is more helpful than “preserved remains from Pompei”.

Orientation: The first step to reading a tactile graphic is to identify the top of the page, usually through location of the title, print page number or a cut corner, which guidelines demand are placed in a consistent position. For example, all school books have the page number in the top right corner in Australia (ABA, 2016) and bottom right corner in New Zealand (BANZAT, 2014). The page is then correctly oriented toward the reader. By contrast, 3D models often do not have an obvious top and bottom. Further, with the exception of large maps and models with a broad flat base, most people tend to pick up 3D models and turn them around in their hands to explore them from multiple angles. Thus, it is important to describe the orientation of the object when it is first presented to the touch reader. It is also helpful to identify a prominent feature on the top, bottom or front of the model so that the correct orientation can be found again once the model has been turned. For example, “The floor is grainy, while the two upright walls have a rounded brick texture”.

How the model differs from the original object: It is also important to specify how the properties of the model differ from the real object (Bogner et al., 2011). For example, is the real object more soft, flexible, smooth, rough, heavy or solid? Does it have a particular temperature? What is it made from? What is its scale? As always when supporting concept development, point out relationships or contrasts with objects that the student already knows or that are available on hand to touch.

If it is the first time the student has handled a 3D printed object, it may be helpful to give a brief explanation of the printing process and how it affects the feel of the model. Most common 3D printers use melted plastic, which is printed in layers. This means that the base of the object will be very smooth, the sides may have small ridge lines, and any overhanging pieces may be rough on the underside where support stems have been removed or melted plastic was left dangling in mid-air. While the 3D model should be checked and smoothed before being handed to a touch reader (as described in the guidelines on preparing 3D prints for touch readers (Round Table, 2021a)), having an understanding of possible by-products of the 3D printing process ensures that students who are BVI will not become distracted by unimportant details, and will more easily be able to identify which way up the model should sit.

Labelling

While young children will benefit from verbal guidance from a teacher, parent or peer, older students should be encouraged to develop the skills to study more independently. Most tactile graphics are accompanied by a braille title and braille labels or symbols with a braille key on the opposite page. However, these strategies are rarely practical for 3D printed models as they often have curved surfaces, a smaller surface area, and are not accompanied by a book where the key can be listed. Alternative means of labelling a 3D model must instead be considered.

Even if there is no space to label the individual parts on a 3D model, it is usually possible to at least provide a short title for the 3D model in braille. This can then be cross-referenced with a written description, provided in hard copy braille or as an electronic file. If parts do need to be labelled, a basement may be a good option. This is a tactile graphic or flat base with an outline where the 3D model should be placed and print and/or braille labels around the outside of the outline. For non-symmetrical models, a basement has the added advantage of indicating the orientation. For high-use models, audio labels may also be a viable option for providing an introductory description and/or labels for parts. A range of technologies can be used for audio labels, ranging from a simple PenFriend through to QR (quick response) codes, NFC (near field communication) tags and touch-triggered electronics. Further guidance on techniques for labelling 3D models, developed in collaboration with the Australia and New Zealand Accessible Graphics Group, is given on the Round Table website (Round Table, 2021c).

2. Gain an overview first

The first step to gaining an overview of a 3D printed model is accessing the title and description, as outlined above. The second step is a quick and complete tactile search.

For any media read by touch, understanding is greatly aided by conducting a systematic tactile search to gain an overview before examining the detail (Wilkinson

& Hasty, 2012). For tactile graphics, students are taught to conduct a systematic search to gain a quick view of the whole page before beginning to read detail (Willings, 2019) because overall performance using the tactile graphic improves when students are taught to use specific scanning patterns (Berlá, 1973). Once the main forms have been detected on the page, tracing the outline of a tactile image aids in picture recognition (D'Angiulli & Kennedy, 2000). However, the scanning methods for tactile graphics rely on quick left/right, up/down and circular movements that are often blocked by protruding forms on flat graphics with 3D elements. When exploring 3D models by touch, an equivalent but quite different process is required to gain an overview of the shape as a whole.

Students should explore the overall shape of a 3D model with both hands as a first step to touch reading a 3D model.

To gain an overview of a 3D model, the two hands can be spread and placed carefully on the top and sides of the model. Use the palms and full length of the fingers of both hands to gain an overall mental image of the model. Smaller models can be picked up and rotated in the hand to gain an understanding of the basic shape. If the model is too large to hold or feel at once, conduct a systematic search from left to right, top to bottom, or move around the model to explore it from every angle.

3. Explore the detail, using appropriate touch and reference points

Once the student has determined the overall size and shape of the 3D model, they can then go on to explore the detail. Ample time should be provided for this tactile exploration.

When exploring a 3D model, features are first felt from the top or outside of the model. It is important to conduct a more thorough search with the fingertips and finger pads to explore all important features. The student should be prepared to move inside the structure of the model, touching the sides and around the base of protruding features and feeling for holes, different levels, significant features and special markers.

Touching is a learned experience. Students should be taught appropriate methods for exploring 3D models by touch.

Hand movements for exploring 3D models

Students are taught to read braille and details on tactile graphics using the finger pads, which are highly sensitive. The hand is held flat with the fingers slightly curved during this usual practice of touch reading. However, observation revealed that when exploring 3D models, touch readers use much more curved fingers to go around protruding shapes and sometimes need to rely on the fingertips rather than the finger pads for hard-to-reach spaces. Moreover, different hand movements are required according to the task when exploring 3D objects. For example, wrapping with the

whole of the hand is required to determine global shape, rubbing back and forth across the surface with the finger pads in multiple directions is useful for judging curvature and texture, contour following is a smooth movement across the surface using one finger, and poking is required to discover enclosed spaces (Lederman & Klatzky, 1987). Using two hands simultaneously is helpful to gain an understanding of the symmetry of the object and the spatial relationship of individual parts. If a student needs encouragement to tactually explore the model, then hand-over-hand or hand-under-hand techniques may be considered, with the aim of teaching skills that the student will then use independently (Cook Walker, 2015).

As always with tactile reading, a light touch is best for perception (Dixon, 2021). In the case of 3D printed models, a careful, gentle touch will also ensure that the touch reader will not get snagged or hurt on protruding parts. Similar to reading thermoform sheets, it is helpful to dry off clammy or damp hands or use talcum powder to enable smooth movement across the plastic surface that could otherwise be sticky and difficult to read (Aldrich & Sheppard, 2001; Edman, 1992).

Using reference points

Reference points are required for orientation and when exploring detail. As already mentioned, it is natural to turn a 3D object in the hands while exploring it, so it is helpful to identify a reference point such as a flat smooth base, a pointy top, or a braille label at the front that can be used to find the correct orientation again once the model has been turned.

When exploring tactile graphics, a typical strategy is to hold one hand on a reference point while exploring distances, contours and relationships with the other (Wilings, 2019). The same strategy is also useful when exploring 3D models. To gain a better understanding of the relative dimensions, the student may use a point of reference by keeping one finger on a point while tracing a line, pathway or edge. This is especially useful if the line traced goes around the object, for example from front to back. Again, allow plenty of time for exploration as repeated referencing between one feature and the other parts of the model helps to build up an overall understanding of the model and relationships between its parts (Bogner et al., 2011).

Conclusion

3D models offer a new format for conveying visual aspects of the curriculum to students who are blind or have a severe vision impairment, with the potential to be easier to understand, more engaging and more inclusive than tactile graphics or description alone. This paper proposed three principles for touch reading in the classroom: provide a description of the model when it is first presented, encourage students to gain an overview of the model first, and teach strategies for exploring the details.

As an additional resource, Appendix A provides a template form that may be helpful to accompany each 3D model being used to support the curriculum. It can be completed by teachers and provided to students in an accessible format or used as a prompt when discussing the model in the classroom.

It is anticipated that the principles presented here will assist teachers of BVI students to provide the support they need to successfully access 3D printed models as an engaging component of their education. Further information and guidelines produced in collaboration with the Australia and New Zealand Accessible Graphics Group can be found on the Round Table website at <https://printdisability.org/about-us/accessible-graphics/3d-printing/>.

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Appendix A:

Template 3D Print Information Sheet for Students

Title: 3D print title

Orientation: How to identify the bottom, top and/or front of the print.

Overview: A broad description of what the model depicts.

Details: Describe any important details to look for and how to find them.

Scale: What is the size of the object being depicted? Try to describe the scale in relation to the body or a familiar object, for example the real object is twice the height of an adult male, or a person would be the size of a grain of rice on the model.

Materials: What material is the real object made from? How does this differ from the 3D model?

Activities: Suggestions for how to interact with the 3D model. Questions to ask in relation to the model to further the student's learning.

LEAP Up – Transition to Tertiary Pilot Program - Dominica Maloney, Melissa Fanshawe, Alexandra Boys and Lauren Terhes

Abstract

In 2020 Vision Australia implemented a Transition to Tertiary pilot program which was designed to prepare young people who are blind or have low vision for tertiary education. The program titled LEAP Up (Learn, Engage, Act, Perform) invited young people who were enrolled in mainstream secondary school, or had recently completed school to participate. Nine young people aged 14-18 engaged in a five-week program that included weekly group sessions with guest speakers, individual sessions with allied health professionals, and drop-in sessions with education and employment consultants. A learning management system was also created to allow the young people to experience online learning in a simulated tertiary environment, with coaching and assistive technology support to negotiate and problem solve access. Results of the evaluation showed that the young people had a greater awareness of the expectations of what was required in a tertiary environment.

Introduction

The transition from secondary schooling to tertiary education is a critical point for many young people. This article will explore the development of a pilot program titled LEAP Up (Learn, Engage, Act, Perform) that focused on preparing young people who are blind or have low vision with the skills required to be successful in tertiary education to ensure a positive transition. This is an important need due to the low employment rates of people with low vision or blindness (Vision Australia, 2018a). The report will describe the development, implementation and evaluation of the LEAP Up program and recommendations for future programs.

Vision Australia is the leading blindness and low vision agency in Australia. Vision Australia provides services to 25,500 people who are blind or have low vision through their 35 centres across Victoria, New South Wales, the Australian Capital Territory, Queensland, South Australia, and Western Australia. They also provide outreach programs in the Northern Territory and Tasmania (Vision Australia, 2021a).

This pilot program (LEAP Up) provided a simulated tertiary experience which aimed to grow understanding and awareness of the skills and knowledge required by young people who are blind or have low vision to be successful in tertiary education in a safe and supportive environment. By building awareness, we aimed to provide an opportunity for each participant to understand the challenges of tertiary education at a personal level and then with support of a Vision Australia staff member could plan and develop goals related to the skills they need to acquire to be successful.

Young people who are blind or have low vision have several considerations as they transition from secondary school to tertiary education, which they may not be aware will impact the transition. These may include barriers to accessing information (McLinden et al. 2016), difficulties with orientation and mobility throughout the campus (Blake, 2021) and lack of ability to advocate for accessibility needs (Hewett et al., 2018). This paper hypothesises that by building awareness of these challenges, young people will have the opportunity to develop the skills required to enable a successful transition (as presented in diagram 1). This program aimed to increase the awareness of the skills required by young people who are blind or have low vision to enable a successful transition to tertiary education.

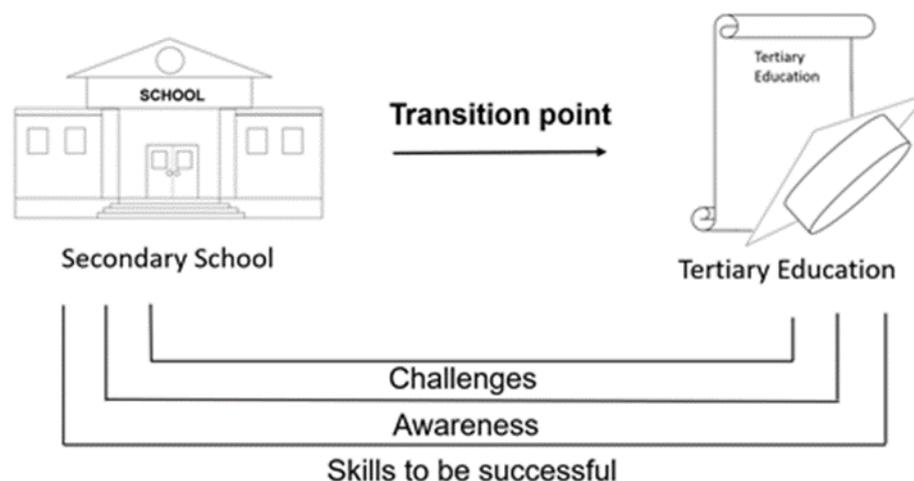


Diagram 1 - Transition from school to tertiary education

Literature Review

Vision is the sense that allows people to see information around them in the environment (Cain & Fanshawe, 2019). Without vision, young people in higher education settings may experience difficulties accessing curriculum content (McLinden et al., 2016), interact with their peers (Jessup et al., 2018) and move through the environment (Blake, 2021). Furthermore, young people are expected to be proficient in accessing content and interacting in online environments (Cain & Fanshawe, 2021). As such, young people who are blind or have low vision are at risk of not being able to embody the full university experience (Vision Australia, 2018a). The following review will cover related topics of preparation for and success in Tertiary Education, specific to people who are blind or have low vision.

Preparation for Tertiary

Young people who are blind or have low vision who are enrolled in mainstream secondary schools, receive preparation for tertiary education and future employability, through engagement in the Australian National Curriculum (ACARA, 2013). The curriculum includes academic, personal and social capabilities, along with technology skills to prepare young people for the post-school transition.

However, it is argued that due to the visual nature of the curriculum, not all of the content is accessible and therefore young people may not have been prepared for tertiary experiences at the same level as their peers (Blind Citizens Australia, 2013).

Disability-specific skills, known as the Expanded Core Curriculum (ECC), have been identified as important, alongside the academic curriculum, to assist young people who are blind or have low vision to access information that other young people can access through sight (Hatlen, 1996). These skills assist young people by providing compensatory access to information, through use of alternate formats such as braille or through use of assistive technology. The ECC develops personal skills to have agency in learning, through self-determination and advocacy (McLinden et al., 2020). The ECC also includes social skills to interact with peers and orientation and mobility skills to navigate confidently through the environment (Allman & Lewis, 2014). The literature revealed that tertiary education systems rely on the individual entering higher education with independent skills in place (Coduti et al., 2017; McCall, 2015). However, if young people who are blind or have low vision do not have the ECC skills, they may not be independent in learning. A lack of scope and sequence of the ECC in the education system, or limited time with specialist teachers may mean that young people have not been taught these valuable skills to access learning independently (Keil & Cobb, 2019).

Success in tertiary education

Upon entering tertiary education, there is a balance of responsibility to access to learning, between the university and the young person. Specifically, for young people who are blind or have low vision, this relates to the accessibility of the learning environment offered by the university and the skills and agency of the young person to access learning (Hewett et al., 2017). Universities have legal obligations to ensure access to content for all students. For example, the International Covenant on Economic, Social and Cultural Rights (UNGA, 1966) states that 'higher education shall be made accessible to all' (Article 13, part 3). Within Australia, the Higher Education Standards Framework (Australian Government, TESQA, 2017) outlined that learning materials within courses "are appropriate to the level of the course of study, consistent with the expected learning outcomes and modes of participation, and accessible when needed (including for individuals with special needs)" (Domain 3.3, p. 22). However, a report by Vision Australia (2018b), *Online but Offtrack*, revealed that many young people in tertiary education experienced significant accessibility barriers when using online education environments.

Online learning environments are frequently a core component of a young person's learning within tertiary institutions (Vision Australia, 2018b). It has been identified that even if young people are enrolled on-campus, young people will need to access the online learning environments to complete necessary course requirements (Norton et al., 2018). As online learning environments are designed for those who

can see, this can cause accessibility issues for young people who are blind or have low vision. Inaccessible content can include access to images, videos and multimedia, course readings and textbooks, assessments, and feedback (Cain & Fanshawe, 2021; Hewett et al., 2017). Furthermore, Grove (2020) exposed that a core area of concern for young people enrolled in tertiary education was the incompatibility of institutional software systems with screen readers, which is concerning given the recent advancements in technology. Thus, findings highlight the multitude and depth of difficulties young people who are blind or have low vision continue to face.

Many universities provide disability consultants who offer support for young people and staff. Their role can include providing information for staff on how to make content accessible for young people. It also may include support for young people with alternative formats, such as braille or image descriptions. While these services can be useful, some young people who are blind or have low vision have reported that they do not have access to the content at the same time as their peers (Vision Australia, 2018b). Brown et al (2011) also noted that while specialists may be trained in disability, they rarely have the expertise required to make modifications for young people who are blind or have low vision. This is problematic, as Bishop and Rhind (2011) identified that young people who are blind or have low vision are most likely to withdraw from tertiary studies due to lack of support or institutional accommodations.

Recent research suggests that the digitalisation of content for online learning can actually benefit young people who are blind or have low vision, by providing access to content which students can modify themselves (Akcil, 2018). This aligns with a focus on preparation for tertiary education and future employability, in mainstream schools, by encouraging students to learn to access materials (Hewett et al., 2017; 2018, McLinden et al., 2016; 2020). This view is based on young people having agency for their own learning through developing skills in compensatory access and assistive technology to maximise their engagement with learning (Allman & Lewis, 2014). Thus, emphasising the importance of the ECC in preparing young people for tertiary education.

Assistive technology is a powerful tool to decrease the impact of disability in learning (Opie, 2018). The skills to use technology to modify document formats, access content and search the internet, are powerful indicators of post-school success according to Kelly & Wolffe, (2012). However, research suggests that young people who are blind or have low vision are entering higher education with limited knowledge of assistive equipment available and limited experience of incorporating such equipment into practice (Coduti et al., 2017; Hewett et al., 2017). Douglas and colleagues (2017) highlighted that young people are not currently receiving formal training to use specialist equipment to support the transition to tertiary education.

Independent management skills have been identified as important skills in the tertiary system for all young people (McCall, 2015; Coduti, et al., 2017). To access learning independently, young people who are blind or have low vision need to navigate the online learning environment through compensatory means to access content. Young people who are blind or have low vision enrolled in tertiary education are expected to possess both self-awareness into their abilities and access and self-esteem to advocate effectively for their needs (Bishop & Rhind, 2011). Klinkosz and colleagues (2006) identified both personality factors more common in high achieving young people at university who are blind or have low vision; such as conscientiousness and agreeableness. This included factors such as persistence, thoughtfulness, organisation, control and goal related behaviour.

Support to assist young people to develop agency and self-advocacy was seen as a predictor to success in tertiary education. McLinden et al (2020) found that supporting young people through school with skills to set goals, and advocate for their own needs played a role in preparing for tertiary and future employability. McCall (2015) suggested that support figures including parents, secondary school staff and therapists played a role in influencing self-confidence for young people enrolled in tertiary education who are blind or have low vision. McCall (2015) noted that a young person was able to play a role in their own education while at school, by attending individual planning meetings. They moved from initially a more passive role, to collaborating with relevant staff to independently coordinating these meetings. Additionally, Schuck (2015) found that young people who sought academic help outside of post-secondary institutions and utilised resources such as library support within institutions were four times as likely to persist in tertiary education.

Developing a sense of belonging in universities through peer groups was also identified as important. A role of the tertiary environment is to develop a sense of belonging within the university environment and developing a young person's identity (Redmond et al., 2018). Findings from Scott (2009) showed that positive peer relationships were pivotal in facilitating academic success specifically for young people who are blind or have low vision. Having support from peers was important in the tertiary context to feel belonging to the university and provide support when study became demanding. However, it is known that social interaction skills are not easily acquired casually and incidentally by young people who are blind or have low vision (Reed & Curtis, 2012). According to Miller (2001, p.16) "social skills must be carefully, consciously and sequentially taught" to young people who are blind or have low vision so that upon leaving school, young people are confident in developing relationships with their peers, who can provide support (Miller, 2001; Grove, 2020).

For those young people who were studying on campus, orientation and mobility skills to move confidently through their environment were important to facilitate social interactions and access classrooms (Blake, 2021). Young people were required to

extend upon orientation and mobility skills and problem solve within the tertiary environment (Johnson-Crain, 2003; Cmar, 2015). These skills included increasing experience in community travel to and from university, movement through the campus, utilising assistive technology and seeking support (Grove, 2020). Johnson-Crain (2003) discussed that young people require skills to not only memorise routes to, from and around campus but require the ability to adapt when disrupted by weather, construction, or other pedestrian detours. Skills in community travel, transport routes, and travel to unfamiliar locations/buildings are essential in developing skills necessary for tertiary education (Cmar, 2015; Bishop & Rind, 2011).

Thus, the literature has identified that there are challenges in tertiary education for young people who are blind or have low vision. The following section outlines the method of the project undertaken to raise awareness of these challenges, so students could identify further skills to build on, to be confident upon transitioning to tertiary.

Method

The LEAP Up program was delivered in November and December 2020 via an online method to 9 participants. Although COVID 19 was impacting in person delivery during this time, the decision to deliver virtually was to reach as many young people as possible in Australia. It was also thought that this would replicate online learning, which is prevalent around Australia (Cain & Fanshawe, 2021).

Participants

Participants were young people, aged 14 – 18, who are blind or have low vision, considering attending tertiary education. Participants were recruited through an email to Vision Australia clients who had previously participated in Vision Australia's LEAP (Learn, Engage, Act, Perform) Program (Vision Australia, 2021b) in either 2019 or 2020.

Development of program

A diverse team was drawn together to develop the LEAP Up pilot program. The team included a service designer, pre-employment consultant, current university lecturer, occupational therapist and occupational therapy students. Each member of the team brought a unique skillset to support the holistic development and implementation of the pilot program.

During the preparation period, the team consulted staff from Perkins School for the Blind who deliver the Compass tertiary transition program. As research asserts, subject matter experts are shown to be effective in informing best practice evidence (Heagney, 2016). Learnings from the engagement with Compass included the need for both the young person and their family to be involved, informed and prepared for this transition. This led the team to offer a parent/guardian information session to

educate parents on the importance of transition preparation, which had been noted through the Compass Program. The team also noted feedback from Compass on the need to commence transition preparation early for young people who are blind or have low vision. This impacted the team's decision to open the pilot program to young people aged 14 – 18. The literature was reviewed and reflections from the experience of the staff guided the development of the program. With the aim of simulating the tertiary experience to build awareness of the skills required, the team focused the program to include key 'tertiary' experiences. These experiences included lectures, tutorials, individual and group assignment(s).

To optimise the simulated tertiary experience, an online course in a learning management system was created. The online course required the young people to register for the course online, access information including dates, times and zoom video conferencing links of the lectures, lecture content, access and submit assignments and engage in conversation with peers through discussion boards. Accessibility testing was completed prior to the program commencing using experts from Vision Australia's Adaptive Technology Helpdesk auditing the program content and learning management system.

In this development phase, it was also recognised the importance of follow up after the program to link in services to support goals identified through LEAP Up awareness such as occupational therapy, orientation and mobility and assistive technology. Vision Australia primary service providers were identified as being key for this pre and post-program engagement with the young people. These staff were able to coordinate follow up services required by the young people at the completion of the program, to prepare them for the transition to tertiary education.

Outline of Program

The pilot program commenced in November 2020 and ran for five weeks, delivered via video conferencing. The program was delivered to nine young people aged 14-18. One young person who engaged in the program fell outside the initial criteria as he had already commenced tertiary study. If the young people were involved in other Vision Australia services, these continued whilst they engaged in the program.

Prior to the first week of the program, interested young people were sent a link to register for the program. Once registered, the young people had access to pre-program activities including the Career Adapt-Abilities Scale + Cooperation Scale (CAAS+C) (Nye et al., 2017) and a pre-program survey. The CAAS+C was identified as a tool which had been validated to measure concern, control, curiosity and confidence for young people transitioning out of school (Nye et al., 2017). The pre-program survey was a tool designed by the team with an intent to measure change experienced by the young person. Week one involved an individual session with the young person's allocated primary service provider where pre-program activities were discussed and reviewed. Goals for the program were also documented.

Weeks two to four of the program involved the simulated tertiary experience where young people attended weekly lectures and tutorials. Topics explored during weeks two to four of the program included:

- what does it mean to be tertiary ready?
- self-advocacy skills and support options in tertiary education,
- experiences of past student university graduates who are blind or have low vision, and
- exploration of goal setting.

The program concluded with an individual session with the primary service provider focused on goals developed from the program and collaborating with the young person to develop a plan to achieve these. All the young people participated in the entire program.

Key Tertiary Experiences included in the program

The Learning Management System (LMS) became a valuable resource during the program and a key way for the facilitators to share information and resources directly with the young people. The program utilised Brightspace as the LMS which the team was familiar with and was known to be accessible for people who are blind or have low vision. Through using a LMS, we exposed the young people to the online structures that they will experience in tertiary education. The LMS was an opportunity for the young people to test their adaptive technology and problem-solving skills.

Lectures and Tutorials were presented via zoom video conferencing to enable recording and for the course to be offered to young people regardless of their physical location. The sessions were recorded and uploaded to the LMS. A range of lecturers, including Vision Australia staff and external speakers presented throughout the program with the aim to highlight the diversity that young people will experience in tertiary education. Small tutorials offered discussion of the content, questions and exploration of weekly assignments.

Optional Drop-in sessions were offered to the young people to simulate what is offered by some tertiary institutions. This time was used to problem solve challenges raised by the program whilst some young people work on their assignments with support of course staff.

Individual and group assignments were an integral part of the program. These assignments were short in nature, but prompted the young people to consider the content delivered in the program and how it applied to their unique situation. Formatting criteria were included in the assignment to highlight the requirements in tertiary education, and whilst the assignments were not graded, individual feedback was provided through the LMS to each young person.

Support options were available, although young people were required to request assistance rather than course staff checking in with them on their ability to complete course requirements. Options for support included a generic course email address or using discussion boards through the LMS.

Collection of data from the program

Pre and post survey data were collected from all students to gather feedback on how they rated their level of skills and knowledge in key areas. The surveys were uploaded to the LMS and the young people were asked to respond in this environment. These included:

- technology skills
- preparedness for tertiary education
- connection with others who are also preparing for tertiary educations
- advocacy skills
- resources/ supports for tertiary education

The young people were also asked to provide feedback following each group session and a final evaluation of LEAP Up. Although they were reminded to complete their feedback through LMS messages on average 59% (n = 5.3) of young people responded each week. Upon completion of the program, the young people were asked to complete an end of program evaluation, which was completed by 33% (n = 3) of the participants. Additionally, they were offered individual interviews to provide more in-depth feedback about the program. However only one young person was able to be interviewed. The staff involved also provided feedback and people with lived experience of blindness or low vision and tertiary education were invited to provide feedback about the program.

Findings and Discussion

The implementation of the LEAP Up Transition to Tertiary program identified three areas that require greater awareness to prepare for the challenges of transition to tertiary. First, young people require more skills to use a wide range of technology and apply the knowledge to different situations. Second, accessibility of tertiary institutions and independent living skills and third, it is important for young people to have self-advocacy to communicate their needs to educators.

Skills in a range of technology - applied to different situations

The young people in the program demonstrated a wide range of technology skills. Some young people were able to use a variety of technology to access information on the learning management system, whereas other young people found this very difficult. Similar findings were made by Hewett et al. (2018) who undertook a longitudinal study to investigate the experiences of 32 young people who are blind or

have low vision in higher education. Hewett et al. found students had differing pre-existing abilities of assistive technology and other areas of the ECC which impacted access to content in tertiary. Being independent in these skills was seen as a predictor for success in tertiary (Opie, 2018).

The pilot program additionally revealed that young people needed to employ problem solving skills when using assistive technology to independently access content. To support young people to access the learning management system, assistive technology specialists provided advice in a similar manner as disability consultants would in a tertiary context. Drop-in sessions were also provided with some young people seeking support to use technology. To support this transition, young people can work with specialists to continue to progress towards their assistive technology goals after the completion of the program. Therefore, creating awareness of the skills needed to access tertiary environments was a benefit of the program.

Accessibility of tertiary institutions and independent living skills

Accessibility of the tertiary environment is an important factor in an individual's ability to access, engage and succeed in educational pursuits (Cmar, 2015). Currently many online tertiary resources for students who are blind or have low vision remain inaccessible (Vision Australia, 2018b). However, Cain & Fanshawe (2021) argue that many elements of the online environment can be made accessible with conscious planning from educators. To realistically incorporate the accessibility challenges in a supported environment, LEAP Up used many of the features of the LMS which could be difficult to access with assistive technology including calendar functions, discussion boards and assessment portals. In future LEAP Up programs staff will consider purposefully including a number of inaccessible elements to test and challenge problem solving. It also enabled students to practice advocating for their accessibility needs. In the evaluations it was highlighted that opportunities to learn and apply skills in document conversion and related tasks would better equip participants for tertiary education.

Young people who participated in the LEAP Up program all agreed that it was necessary to address travel aspects of attending tertiary institutions in person. The young people noted their anxiety around travelling on public transport and moving through the campus with peers as two areas of concern. Orientation and mobility were noted as a valuable theme for future program delivery. Although delivering the program through an online platform, it was proposed that hands-on experiences within the field of orientation and mobility would be significantly beneficial in emulating real life experiences.

The young people also suggested that it would be highly valued for future programs to include sessions with an occupational therapist targeting likely experiences on and off campus including food preparation, medication management, and discussing potential support packages. It was recommended that discussions surrounding

concepts of wellbeing including sleep scheduling, nutrition, and concepts surrounding work life balance be incorporated into program design.

Self- advocacy and communicating needs

Being able to advocate and communicate needs builds empowerment for a person (Wolffe & Erin, 2020). LEAP Up sought to provide awareness of when young people may need to advocate for themselves politely and respectfully, and an opportunity to practice these skills. Role playing scenarios centred around advocating for learning accommodations were highlighted as valuable program content to build skills in self-advocacy and confidence. It was emphasised that consideration of both positive and undesirable circumstances be addressed in simulated activities.

This program also offered a presentation from a disability liaison officer to build on participants' awareness of the disability services available at Australian tertiary institutions. By having an understanding of these services, it is hoped that the young people will be more likely to advocate for their learning needs within tertiary environments. In future programs a session will be conducted by individuals with lived experience of blindness or low vision to further discuss topics of disclosure and advocacy within the tertiary environment. It was also suggested in program feedback that participants were also made aware of students' rights in the Disability Discrimination Act, through incorporating such content into program design.

Limitations

As a pilot program, LEAP Up was limited to a small group of nine young people who had previously participated in a Vision Australia LEAP program. It was difficult to capture feedback from the whole group. Regular surveys were sent and inconsistent response rates were received. When requesting interviews, only one pilot participant offered to be included. It is also recognised that skill development for tertiary education is much greater than a five-week program delivered via zoom video conferencing. Many of these skills are gained in the mainstream secondary classroom and it takes time to work and refine these skills. While it is suggested that this program aimed for students to become aware of the skills levels required in tertiary, more research is required to understand the benefits of the LEAP Up program.

Conclusion

The LEAP Up Transition to Tertiary program was designed to raise awareness for young people who are blind or have low vision of the challenges involved in tertiary education. By having awareness of the challenges, it was hoped that young people would identify areas that they required further development and make goals to prepare for their transition to tertiary. While this program only had nine participants, the program itself proved to be very valuable to participants, with all young people completing the five-week program. It was identified that the program offered the

opportunity for students to become aware of the challenges in tertiary education. This would enable young people to set goals and work to prepare themselves in the skills identified areas prior to transitioning to tertiary.

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The Importance of a Professional Learning Community to Teach a Student who is Blind in a Mainstream School - Karen Croake

The work of teaching is complex. In order to ensure inclusion for a diverse range of students, educators must minimise barriers to learning in order to establish equitable access to the curriculum and build teaching on evidence-based practices. The needs and ongoing progress of students, as well as our own progress as teachers requires reflection. In addition to working with the families of our students and often the community, teachers liaise with allied health professionals and experts from many places in the hope that they can help us support our students. So often we seem to do this alone. Teaching can be very isolating, even when you are surrounded by colleagues. There is an unspoken expectation that the student is in **your** class, so **you** need to teach them. This paper is a reflection on these concepts which describes the author's journey to create a professional learning community to teach a student who is blind in a mainstream primary school.

In my teaching role, I had worked in Special Education for many years in various roles and various settings and was excited to take on a new challenge of Specialist Vision Teacher for a Kindergarten student who was blind (NLP). In my sector there is no central service provider who provides braille or tactile graphics. My role was to support the class teacher to program the adjustments for this student, teach the student to read and write braille, develop visual concepts through pre-teaching, braille all print materials, create tactile graphics for concept development and for all big books and PM readers, teach orientation and mobility skills to develop independence of movement around the school, teach staff and students about the adjustments they needed to make for this student as well as to be sighted guides, teach social skills, organise education assistants to provide in-class support when I was not there, provide playground support, and to ensure the student was settling into school happily.

This turned out to be a much bigger job than I had anticipated. By the end of Term 1 the class teacher and I were exhausted. This was not sustainable. Despite the fact there was a large staff and other grade teachers on Kindergarten, this student was **our** student and therefore **our** responsibility. We were often wished well, and colleagues marvelled at what we were doing, but ultimately, we were very alone and overwhelmed. At the end of Term 1 I reflected on our first term and wondered if it would get better. Our student was excelling. She could read more sight words than her peers and she was writing simple sentences. She was able to independently navigate around the Kindergarten area and she could go further afield with my presence to reassure her. Our student was thriving. The class teacher and I were

not. It was then that I remembered the African proverb ‘It takes a village to raise a child’. I knew that I needed to create a village.

Although I was thinking of a village, DuFour et al. (2010) define what I needed as a professional learning community (PLC). According to DuFour et al. (2010) a PLC is an “ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve.” (p.11). They believe that teachers must work collaboratively to improve learning outcomes for all students.

I took some time to consider the meaning of collaboration. Frequently collaboration is assumed to mean “working together”. Sharratt and Planche (2016) define collaboration as “co-labouring” (p. 6), explaining that collaboration requires all parties to have some power in the decision making process with everyone’s contribution being valued. In other words, “collaborative learning extends the notion of co-labouring to involve a group of learners working together to understand and improve teaching and learning challenges and dilemmas” (Sharratt & Planche, 2016, p. 6). As we certainly had challenges and dilemmas, this seemed to be the best definition of collaboration for my professional learning community . . . I just needed a PLC.

During this time, our leadership team began to change our school culture from one where teachers worked individually to one where professional learning teams were the centre of a professional learning community. As a staff collective we began to explore Sharratt et al’s (2012, 2016) ideas on collaborative learning. These include leadership behaviours identified by Sharratt and Planche (2016) that build readiness for collaboration;

- Build strong relationships.
- Be an active listener.
- Articulate why collaboration is important.
- Model a positive growth mindset.
- Maintain student learning as the driver for collaboration.
- Ensure that participation in collaborative endeavours is inclusive.
- Partner with staff to establish clear learning goals for collaboration.
- Mediation and conflict resolution is important.
- Facilitate discussion and a safe space to take a chance.
- What we do has to be sustainable.

Upon reflection, I also added two points of my own:

- Just because it's not what I would have done, doesn't mean it's wrong. I needed to keep an open mind and be prepared not to be the one with all the answers.
- Be ready to problem solve (time and time again!).

Slowly I was developing an understanding of what I needed to create my own PLC. Sharratt and Fullan (2012) identify 14 parameters which they believe are the key drivers for a school to become a place of high student achievement and teacher performance. The first parameter is "shared beliefs and understandings" (p.11). It is this parameter which underpins Sharratt and Planche's (2016) definition of collaboration. I now had the theory, I just needed to implement it and create my own PLC.

Sometimes we are fortunate enough to have people around us who are brave enough to take the first step, while we're still struggling with the theory. One of the education assistants, after watching my less than artistic attempt at creating tactile graphics for a book, offered to make the tactile graphics. It was a simple gesture, but the impact was profound. The class teacher and I were no longer alone. I had the beginnings of a PLC.

It takes hard work and time to build a collaborative team to form a true PLC. Our student was only at the beginning of her formal education journey. We needed time to imagine how we could develop a PLC and truly co-labour together so that our student could be a high achiever and we could continue to learn from each other and strive for professional excellence.

For the next couple of years we worked on building our PLC. We were now a PLC which included two education assistants, a tactile graphics officer, an alternate format producer, the three grade teachers, the inclusion support teacher and myself. Our community was growing but we had varying degrees of success with collaboration. Marzano et al. (2016) emphasises the importance of reflection in a collaborative team, so we reflected deeply and critically on what we needed to change.

Sharratt and Fullan (2012) suggest that collaborative teams must have shared values and shared practises and be able to monitor how successful their practices are. This brought us back to "Parameter 1: Shared beliefs and understandings" (p. 11). We decided we needed to clearly articulate the purpose of our work to the teachers we work with and organise time to work together collaboratively to develop shared goals based on access to the curriculum and independence. A meeting with the teachers for the following year was arranged in Term 4 to share with them what we were doing and why we were doing it. This included a slideshow explaining everything from what braille looks like, to cane use, tactile graphics, and assistive

technology. Throughout the session I tried to project a growth mindset (Dweck, 2007) - we are all learning how to best support our student as she learns and develops her understanding both academically and of the world.

I'm proud to say our team has grown and evolved to be the collaborative team we are today. No longer does the class teacher work alone, assuming sole responsibility for programming, but rather the three grade teachers work collaboratively to co-plan and program for our student (Conway & Walker, 2017). They are equally responsible for ensuring all activities are accessible and meaningful. I collaborate with them almost daily to ensure we are making the necessary adjustments. There is a strong focus on identifying the learning intention for each lesson and then ensuring that essential skills are embedded in the learning task so that we design rich learning experiences for our student. Assessments are adjusted for access but checked to ensure academic rigor is not compromised (Conway & Walker, 2017). I still pre-teach visual concepts, I'm still teaching the expanded core curriculum, particularly braille and assistive technology skills so that our student can be an independent learner in secondary school.

We now have two Alternate Format Producers, who collaborate closely with the class teachers as they are programming to ensure that all print materials are brailled. Google Docs (<https://docs.google.com/>) is used to record what needs to be done, by whom, when it will be used in class, and then dated when completed. This not only ensures everything is completed on time but may also be used as evidence of adjustments and collaboration for the National Consistent Collection of Data (NCCD) (<https://www.nccd.edu.au>).

Our Tactile Graphics Officer (TGO) creates tactile graphics across all Key Learning Areas (KLAs) to help our student develop concepts. When the teachers are programming, they identify the tactile graphics they need to help teach the concept. For example, when the class were reading "Nim's Island" (Orr & Millard, 2008), the TGO created a tactile graphic where each part of the island was a different tactile experience. This enabled our student to understand not only the land formations but also follow the movement of the characters around the island.

Our ICT Officer has also joined our PLC and is responsible for 3D printing. This is particularly important for objects which our student cannot feel in their entirety, for example bridges.

Our Inclusion Support Teacher works with the teachers to ensure the Personal Plan is completed and that there is evidence to support the chosen adjustment level for the NCCD.

We have four education assistants who support our student in-class and on the playground. By choosing to have multiple people involved we are building an understanding and acceptance of the adjustments required to support a student who

is blind in a mainstream school. We are also trying to avoid student reliance on one individual.

We regularly reflect as a collaborative team on how we can improve our teaching practise, our organisation, tactile graphics, PE resources etc. We are looking at building capacity of the team through participation in professional development opportunities such as attending the Round Table Conference (<https://printdisability.org/conference/>). Incorporating Universal Design for Learning (UDL) (Burghstahler, 2015) helps build capacity of teachers to program with appropriate adjustments for all students. We question the relevance of specific tasks, asking ourselves whether it forms the basis of a concept which will be developed further in later years, is it a concept required for general knowledge, or is it a “time filler”? These questions provide a basis for good discussion for consideration for all teachers.

Upon further reflection I would redefine this collaborative team as a professional learning team (PLT). We sit within a broader PLC which includes many other people outside our school. I am in the fortunate position of also working at the secondary school which our student will attend and can collaborate with the secondary teachers to ensure what I am teaching is appropriate for secondary school. For example, I check with the Maths teachers about the correct sign to teach if there is a choice of two. I talk to the English teachers about the expectations of descriptive writing, particularly from a student who is blind, so that the skills she is learning now will be strong foundations for future learning. I've begun conversations around planning for Year 7 even though it is still two years away, as I've learnt that it takes people time to process the very different support needs of a student who is blind in a mainstream school. I've recently had discussions with the French teacher about braille French.

I would include other people in the area of blind/low vision in our PLC, particularly colleagues at NextSense (<https://www.nextsense.org.au>) who very generously share their expertise, as well as colleagues from various places who have been willing to answer our many questions and generously support our PLT as we learn and develop our skills.

We have come a long way on our journey, and we have achieved much success. However none of this could have happened without our professional learning team. Each person's role is equally important. None of us could support our student alone. Although we no longer feel overwhelmed, at the end of Term 4 each year we are frantically trying to get everything ready for the beginning of the following Term 1. This often means we forget to reflect on the success of the year and acknowledge the role we have shared in achieving that success. Last year was different. We stopped for a moment to marvel at how far we have come - together. At the end of last year our student was awarded the academic excellence award - we took a moment to be proud of her . . . and of ourselves.

This year we have come full circle. Recently I attended a meeting where I was supporting a teacher who was just beginning on the journey of teaching a student who is blind in a mainstream school. Her student will start Kindergarten next year. I shared a lot of practical advice, but the best advice I had for her was to develop a professional learning community. No one can travel this journey alone.

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Independent Learning Through Journaling About Early Childhood Orientation and Mobility Resources, Experiences and Practice - Jessica Caine and Nancy Higgins

Abstract:

This qualitative study explores how the first author's self-directed learning improved her orientation and mobility (O&M) teaching in early childhood through action research and journaling. This article is written from the first author (Caine's) perspective, reflecting on relevant texts from Chen (1999) and others, before, during, and after her readings in relation to her knowledge, thoughts, feelings, experiences, opinions, and future practice. The study's specific findings concluded that action research, through journaling, enabled the first author to connect new knowledge about O&M and early childhood to her past, and that structured and interactive journaling increases understanding, and the confidence to enact O&M 'best practice' in the future.

Key words: adult learning, reflective journals, professional development

Introduction

This article presents a qualitative autoethnographic study to improve my delivery of orientation and mobility (O&M) services to pre-school children. I am currently employed as an Independent Living Skills Specialist (ILS), teaching daily living skills to children, aged 0-21 years. I also teach O&M, under close supervision, to children aged 0-5 years, but I have no formal training in this area, and have not felt confident delivering services.

I am currently a student in the New Zealand Qualification Authority's (NZQA) Diploma in Vision Habilitation/Rehabilitation (O&M strand). Prior to enrolling in this Diploma, my professional development in early intervention consisted of self-directed and collegial learning on the job. This fits with the notion that in early intervention, vision professionals most frequently need to resort to active, self-directed learning methods to stay up to date with evidence based practice through webinars, e-resources, and books (Ely & Ostrosky, 2017).

I am also a mother of a daughter aged three, and a son aged one. Prior to having my daughter, my ILS practice advisor said multiple times, "You'll come back from maternity leave a better practitioner." At the time, I assumed he meant "better" in terms of my relatability to parents. However, this comment has left me pondering. Have my O&M teaching skills been enhanced through my parenting and "trial" teaching of my own children about movement, concepts, and space every day? Will I

now better understand early intervention concepts and theories because I can relate them to my own personal experiences?

Subsequently, the research question that guided this research project was:

- How can my own personal and professional lived experience, as well as available professional resources, improve my practice when teaching O&M to children with a vision impairment, who are aged birth to five?

The research context for the study

Adult learning theory

Adult learning is a process of purposeful learning to acquire knowledge and skills in order to create change in personal behaviours and attitudes (Kapur, 2019). In a review of the literature, Gravani (2012) found that learning is self-directed and active. Palis and Quiros (2014) found that learning occurs from personal experiences and from the connections that can be established between experiences and new learning. They note that such self-reflection is required to make sense of, and give meaning to, new learning. Kapur (2019) identifies that learning goals and objectives need to be clear and relevant to the learner's life, and be problem-centric, with a focus on finding solutions. He noted that this is necessary in order to attain an adult's motivation, interest, and enthusiasm in the learning process.

Gravani (2012), Palis and Quiros (2014), and Kapur (2019) strongly advocate for interactive learning strategies to support adults' needs in connecting real life practice to new information. Kapur (2019) notes that this helps the learner to maintain attention and motivation in the learning process, and to apply new knowledge, skills and practice. Additionally, learners need to actively participate in tasks following the initial reading of new material in order to engrain the understanding of new information (Kapur, 2019). Palis and Quiros (2014) propose adult learning could arise from shared reflections of concrete experiences through dialogue, debates, and questioning around their personal experiences, beliefs, feelings, and knowledge gaps.

Andragogy refers to teaching strategies based on adult learning principles (Kapur, 2019). In total, six adult learning principles were identified including:

1. **Self-concept:** Personality traits shift to being more self-directed (Kapur, 2019).
2. **Experience:** Prior experiences, when used, become the richest learning resource available, and need to be respected by others (Kapur, 2019).
3. **Readiness to learn:** The readiness to learn becomes oriented to the development of tasks included within their social roles (Kapur, 2019).
4. **Orientation to learn:** The need for immediate application of new learning becomes evident and learning shifts from being subject centered to problem-centered. The practical application of learning further consolidates learning (McGrath, 2009).

5. Motivation to learn: The internal motivation related to one's self-esteem and goal attainment becomes the driving force behind learning (McGrath, 2009).
6. The need to know: Adults need to know why they will be learning, and the benefits that the learning will bring to them (McGrath, 2009).

Binu's (2020) literature review notes that emotion has an effect on learning, in that both internal and external factors can impact a person's self-efficacy, self-direction, and motivation in learning. Hökkä et al. (2019) reach similar conclusions, noting that emotions and learning are intertwined, and emotions directly impact actions and thinking in working and learning contexts. Interestingly, they found that emotions linked to experiences at work are often negative, including shame, guilt, fear, and failure.

One of the criticisms of adult learning theory is that it cannot be measured because it does not include the use of tests and grades, there are many different teaching approaches, and the characteristics of adult learners differ and cannot be compared to one another (Taylor & Kroth, 2009). Adults can also experience barriers to learning, including the lack of confidence, time, motivation, and knowledge about existing learning opportunities. They may have scheduling issues and not be able to readily apply their learning (Russell, 2006).

Reflective journaling as a learning tool

Research identifies that trainee teachers could benefit from reflection during, and after, their learning and practical experiences (Leitch & Day, 2000). However, in order for reflection to be most effective, it needs to focus on cognitive-affective links, whereby a person's mental processes, mind-set, knowledge, motivation, attitudes, and emotions all contribute to their understanding of the self for the improvement of practice delivery. Trif and Popescu (2013) studied trainee teachers who kept a journal about their practicum experiences. They concluded that this reflective journal was effective because it helped to record descriptive and reflective personal experiences and guided the analysis of the trainee's personal practice needs, interests, and motivation, which otherwise might not always be considered within the practical elements of their training.

Kessler and Lund (2004) note that reflective journaling enables nursing students to become self-aware and reflect upon their experiences, which contributes to the development of new knowledge, improvements in their professional behaviours and competence, and a better alignment with the realities of the world and daily practice. Research also indicates that journaling provides a space for learners to focus on and clarify their thoughts, to monitor the process of learning, and to manage information that they do, and do not, understand (Liulienė & Metiūnienė, 2009).

Journaling encourages reflection, which is the basis of "deep learning" (Henning, 2012; Kessler & Lund, 2004). It increases the likelihood of understanding the

material, of integrating theory with practice (Kessler & Lund, 2004), and of making judgments about potential obstacles to practice when reading new information (Henning, 2012). Journaling provides opportunities for learners to document their curiosities related to the content, thereby increasing their teaching confidence and willingness to try new strategies (O’Keeffe & Paige, 2020). Because journaling is self-paced, readily accessible, and a confidential way of learning (Kessler & Lund, 2004), it also enables achievements within time and money constraints (Henning, 2012).

The challenges of journaling include the complexities related to the assessment of learners if reflective journals are used as the sole learning tool (Lindroth, 2014); the lack of learners’ time to complete journal entries (O’Connell & Dymont, 2011); frustration and the inability to immediately apply learning into “real life” situations (Henning, 2012); and not freely writing due to fear of being judged by others who may read the journal (Kessler & Lund 2004).

If using a journal for research purposes, Ortlipp (2015) urged caution around issues of transparency and researcher bias. However, journaling can effectively collect and analyse data to improve the writer’s professional practice if it answers set questions, focuses on an incident, and documents the related information that can be gathered (Trif & Popescu, 2013). It also needs to clearly document the thinking, values and experiences behind decisions (Ortlipp, 2015); and explore the relationship between the writer’s current thinking, feelings, and behaviours (Leitch & Day, 2000).

Method

Overarching methodology

This study fits with Sagor’s (2000) notion of action research, which is a process of inquiry completed by the person who is also planning on taking and improving actions in the proposed area. Action research also focuses on helping teachers become more effective in what they care ‘most about’. For me, that was my O&M teaching methods and the development of my early childhood students’ O&M skills.

Action Research is underpinned by the researchers’ reflection before, during, and after their learning and experiences. It documents the researcher’s mental processes, mind-set, knowledge, motivation, attitudes, and emotions related to the topic (Leitch and Day, 2000). It follows a cyclical four stage process, which includes planning, acting, observing, and reflecting (Acosta et al; Sagor, 2000). In this study, using the overall principles of action research, I completed one full cycle of research.

Stage 1: When planning, I identified a research topic, learning about O&M best practice through reflective journaling, and completed a review of relevant literature.

Stage 2: When acting, I gathered data through systematically recording regular journal entries. These entries were based on my readings, chapter by chapter, of Chen’s *Essential Elements In Early Intervention: Visual Impairments And Multiple*

Disabilities (1999). I also read relevant information connected to each chapter. These were accessed online, and not all were peer reviewed. I recorded what I read, what led to further readings or exploration of other learning media, what I learnt, how I felt about the learning, and linked this to my previous personal and professional experiences.

Stage 3: When observing, I analysed my reflective journals, which essentially were observations of myself. Four themes emerged:

1. Without knowing, my practice was based on theory.
2. My experiences as a parent can improve my confidence as a teacher.
3. Exploring actual teaching practice increases my excitement and motivation for future practice improvements.
4. My challenge to improve my practice is about time, resources, and awareness of my knowledge.

Stage 4: When reflecting, I identified changes to my future practice, and completed writing of a research project report and a journal article for publication.

I also completed 10 research sub-cycles that were linked to the ten chapters in Chen's text. The additional readings this led to are outlined in Appendix One.

Autoethnography and reflective journaling

Autoethnography is considered an action research technique because it focuses on investigating a topic related to practice by evaluating oneself, reflecting on experiences from another perspective, and evaluating oneself in different contexts (Acosta et al., 2015). Autoethnography assumes that recommendations for, and implementations of, practice changes will be derived from research findings and will be tested in subsequent or future practice (Acosta et al., 2015; Wall, 2006). More specifically, Hiemstra (2001) explained that journaling, during learning experiences, enables learners to critically reflect on the information that they have read in books, instructional media, and published articles, as it is being read.

For this study, each time I read a resource, I wrote in my journal. My journal writing reflected the four phases of autoethnography as outlined by Acosta et al. (2015): inductive, pre-deductive, deductive, and synthesis. In the inductive phase, I completed a "pre" journal entry recording my knowledge, thoughts, feelings and behaviours regarding the upcoming chapter or topic, along with my practice concerns and challenges. The pre-deductive phase and deductive phase were completed simultaneously as I read the designated resource, and completed a "during" journal entry. I recorded and reflected on the content that I read, and identified related sources of information, or topics, arising from the chapter. Finally, in the synthesis phase, I completed "after" journal entries, in which I wrote about my learning and concluding thoughts about each topic. Here, I refined my

understanding of how theory links to my previous practice and experiences and identified implications for my future professional practice.

Journal templates:

My pre, during, and after journal templates all followed the same structure. The questions that I answered in each of these templates related to:

1. My existent, or newly gathered, knowledge of the topic.
2. My thoughts about the topic.
3. My feelings about the topic.
4. My personal and professional experiences related to the topic.
5. My personal opinions and beliefs about the topic.
6. How this topic might inform and help to me change, or further develop, my O&M teaching practice.

In my journal entries, in order to label and categorize my feelings, I used Willcox's (n.d.) Feelings Wheel, which lists twelve general feelings and four "sub feelings". Furthermore, the Global Digital Citizen's (2017) Ultimate Critical Thinking Cheat Sheet assisted me to critically reflect on my thoughts in my journal entries. This provides eight different critical questions under each of the following categories: "who, what, where, when, why, how". I chose two or three random questions to answer about a resource.

Data Analysis

Traditional qualitative analysis methods (Mutch, 2013) were used to analyze the data from the journal entries. I organized my journal entries into pre journal, during journal, and after journal folders. In each folder, I created six documents which were matched to each template's six questions, and documented my thoughts, feelings, personal experiences, professional experiences, opinions and beliefs, or future practice implications about the topic. I then read and coded the data manually, using coloured pens to group and identify sub topics within each main topic. Sub topics were reoccurring and/or similar responses, phrases, feelings, and ideas. Four main themes emerged from the coded data, and each theme had three subthemes.

Results and Discussion

The research question that guided this research project was:

- How can my own personal and professional lived experience, as well as available professional resources, improve my practice when teaching O&M to children with a vision impairment, who are aged birth to five?

My results did answer my research question. My journaling also provided a safe space to document questions related to the content that I learned, and ultimately,

supported my further development and understanding of knowledge in practice (O’Keeffe & Paige, 2020). I hoped, through spending the time reading and reflecting on theory, that I would more fully understand O&M theory, and confidently be able to apply my new learning when I returned to working with children.

Theme 1: Without knowing, my practice was based on theory.

While reading the professional articles, it became immediately apparent that my closely supervised O&M practice in my ILS role was clearly linked to O&M theory. Later, my O&M training courses and O&M practicum experiences enabled me to understand the theoretical rationale and evidence behind my ILS supervisor’s recommendations. The fact that I could now make the links between my previous disjointed O&M practice and early childhood boosted my feelings of self-confidence and my competency to replicate the suggested teaching approaches in my future practice. I wrote:

I feel proud, and more specifically ‘self-confident’. I feel so positive, and good about myself, knowing that I am familiar with most of these games, and have either read about them before or used them in practice. I feel connected and knowledgeable in this space. (sub-cycle 10b).

This example reinforced Palis’s and Quiros’ (2014) work, which noted that learning occurs from personal experiences, and from the connections that can be established between these experiences and the new learning.

Reviewing theory and connecting content to my practice examples enabled me to reflect on the challenges that I faced in my previous practice and helped me to formulate ideas to overcome these in future practice. Kessler’s and Lund’s (2004) literature supports this finding. They noted that journaling enables a learner to apply existing knowledge, make immediate judgments about potential obstacles in practice when reading information, and combine previous and newfound knowledge of content. One journal entry showcasing this is:

I have experience conducting a small amount of Functional Vision Assessments (FVA) with adults in my O&M Diploma study. Similar to the recommended FVA procedure for children, the amount of assessment areas to cover are large, the process seems daunting, the actual assessment takes a lot of time, and it requires careful planning and prompts from templates to ensure nothing is missed. I remember feeling the same confusion and uncertainty about what tests and activities to include. ... From my experiences of planning and conducting those (adult) assessments, I learnt: don’t rush the process, have an organized resource kit, try to observe multiple visual skills in one activity (when possible), and use a template to record answers, but it can also act as a reference list for questioning and test areas to cover. (sub-cycle 5).

When reflecting on my previous professional experiences in my journal entries, I thought about missed learning opportunities for myself and clients, and feelings of guilt and embarrassment commonly arose. These occurred when I felt that I had insufficient knowledge and skills, had not been informed or trained sufficiently, or when I simply had not made the connections between theory and practice myself. When reflecting on these experiences, I always identified practice improvements that I could make, in order to improve future outcomes for my students. One journal entry illustrating this is:

Ashamed, and more specifically, 'guilty' and 'embarrassed' because I thought I practiced in a family-centred way when developing interventions, but I now believe and feel like I only do so at a very basic level. I feel disappointed in myself that I have not used in depth family discussions or a tool, such as the Routines-Based Assessment, and I feel sad about potential lost opportunities with some prior clients (sub-cycle 8).

Hökkä et al. (2019) explains that when learning is linked to negative work experiences, feelings of shame and guilt are prominent. However, Binu (2020) noted that when learners can evaluate their own learning progress by making self-judgments of their performance, and making plans for adapting their future practice, persistence and motivation for future learning are achieved, which enhances self-confidence and positive feelings of self-efficacy.

Theme 2: My experiences as a parent can improve my confidence as a teacher.

My personal experiences of being a parent positively affected my confidence in my teaching practices. I found that when I reflected about my personal experiences, I was better able to connect to, and understand, the information that I read. For example:

I have no direct experiences of FVA's with my own children, but I do have personal experiences of the use of principles or teaching strategies related to conducting FVA's and subsequent interventions. Prompting occurs all day long with children and is required to direct them in play or routines, especially when actions are not initiated, desired behaviours are not being evidenced, or if as a parent, we are simply wanting a task done more quickly, like using direct verbal prompts to ensure my daughter eats her dinner more quickly (sub-cycle 5).

This finding fits with both Kapur's (2019), and Binu's (2020) research. Kapur (2019) argues that the sharing and reflection of personal and professional experiences becomes the main resource for learning in adulthood. Similarly Binu (2020) explains that when a learner's positive self-efficacy and confidence are evident, then the likelihood of action, following learning, is enhanced. This is evident in my journal writing. I wrote:

I feel proud, particularly 'self-confident', when reading the underlying principles of the caregiver interventions section. I understood this information and could easily match it to personal experiences, and some professional experiences. This has additionally made me feel assured in my existent knowledge, having now increased in understanding, rationale, and labelling of such actions and skills. I now feel trusting of, and confident in, my ability to inform and teach skills to other caregivers, as I believe I now have the theory to match my practical knowledge (sub-cycle 2).

In many sub and sub-sub-cycles of my readings and reflections, I wrote about how I had been integrating recommended O&M practices and strategies into daily tasks with my own children. I quickly transitioned from feeling unsure of my knowledge and skills to feeling intrigued by the idea of trialing strategies in a professional capacity. In one journal entry I wrote:

But now, mostly I feel intrigued, and, more particularly, 'fascinated' and 'energized'. Before reading, I really felt that I was out of my knowledge depth in this area. And as I read, I actually quite can't believe that I understand, but, more importantly, have been practicing what I am reading. I simply was unaware of, and did not have the language, knowledge, and reasoning (for) the skills focused on in this area. (sub-cycle 2).

This fits with Hökkä et al's. (2019) explanation that emotions directly influence the use of new instructional processes, and when feelings of anxiety and insecurity are present, new practices are less likely to be tried. However, once reflected upon, negative feelings can promote a return to learning, improved performance, and increased feelings of competence and confidence.

Theme 3: Exploring actual teaching practice increases my excitement and motivation for future practice improvements.

I found that my previous "partial" professional experience, along with the provision of specific teaching practice tools within the readings, significantly increased my excitement and motivation for future practice improvements. This was due to the increasing understanding of the content that I was reading, especially when I could apply my previous experience to my new knowledge, and to the practical guidance and reassurance that specific teaching tools and instructions provided.

I feel trusting, and, more specifically, secure and confident. Because none of this information that I have read was overly new to me, I have felt somewhat comforted in the fact that I recognized terminology and have previously implemented listed practice suggestions into my own professional practice. My existent knowledge, as well as the newly discovered tool 'environmental checklist for developing independence' has made me feel confident in going to practice O&M independently, without a supervisor joining me. (sub-cycle 10)

This aligns with Binu's (2020) work, where he notes that self-feedback and self-improvement are key internal factors influencing a person's self-direction and motivation in learning processes. It also fits with Kapur's (2019) idea that adult learning needs to be enjoyable, with the new knowledge providing satisfaction to the learner so that it can be applied into everyday life.

Emotions directly impact a person's actions and thinking in working and learning contexts and are often linked to negative experiences at work such as project failures (Hökkä et al., 2019). In addition, adult learning is problem-centric, and is focused on learning solutions to better manage problems that have been previously experienced in practice (Kapur, 2019; Kessler & Lund, 2004). Problem solving, however, can readily occur in reflective journaling because it provides an opportunity to examine and explore issues of concern, triggered by a previous experience. This often leads to clarification of the problem, new understandings, a change in perspective, or proposed changes to future practice (Kessler & Lund, 2004).

In this research project, I reflected on my professional experiences in which I lacked guidance or understanding, and which caused me to feel unsure and confused about my professional actions. Often the information that I was reading for this study was easily connected to such experiences. My reflections about the readings and problematic professional experiences provided suggestions of how to better approach similar situations:

I feel loving, and, more specifically, connected. I also feel trusting, and, more specifically, assured. In the past, I have often felt confused and thought 'where to next?' with clients' programs and sessions. However, I felt so connected and engaged with the content that I read, like the family interview questions and routines matrix, because it seemed to answer all my questions, and offer me clear direction. I felt confident in the apparent ease of use of these tools. Previously, I had viewed them as complicated and overwhelming. I also felt connected to the suggested combination of structured questioning in natural settings and situations. This resulted in feelings of confidence, excitement, and motivation to try these tools in future practice. (sub-cycle 8)

Theme 4: My challenge to improve my practice is all about time, resources, and awareness of my knowledge.

My documented challenges and limitations in my future improved practice often caused me to feel angry and frustrated that the recommended best practice was not always manageable or applicable in actual daily practice. Although I often documented that I liked, or believed in, an approach or theory, I also thought some of this would be too time consuming, overwhelming, and unrealistic to implement in my daily practice. This fits with Gravani's (2012) findings that adult educators and learners involved in a teacher development course did not commit to integrating new knowledge and skills in future practice when they felt that new knowledge was too

theoretical or unrealistic, or unable to be applied to their personal needs in their professional roles. For example, I wrote:

I feel angry, and, more specifically, frustrated, and annoyed. The information that I read and watched presents 'best practice'. Yet, it is often very unrealistic. I have never heard of, or observed, colleagues completing FVA's (functional vision assessments) in several settings, at several times of the day, and in various everyday activities, with one client. Rather, FVA's often occur in one session, in one environment, and do not cover all visual skill areas, due to lack of time and ability to match diaries with families and other professionals. Although I want to try my best to deliver 'best practice', I feel like I am already set up to let myself and clients down (sub-cycle 5).

Kapur (2019) strongly emphasizes the need for learners to actively participate in practical tasks following the initial reading and notetaking of new information. Russell (2006) notes that not doing such tasks can become a barrier for adults in the learning process because adults often experience lack of time, motivation, and information about the practical opportunities, or resources, to put their learning into practice. In my journal entries, I regularly referred to my desire to further engrain the information that I was learning by observing colleagues, and by personally trialing the use of the strategies and tools. However, I didn't always have ready access to colleagues, assessment tools, funding, or time to attend formal trainings or purchase resources.

I feel angry, and, more specifically, envious, and frustrated, that I do not have access to, or am unaware of, an OT in Auckland that specializes in SI (sensory integration) and VI. I can only learn so much about SI as an intervention through personal reading and research. But I need, and learn best, through actual discussions and observations of people delivering practices (sub-cycle 3a).

Despite the challenges that I identified I was able to determine how I could improve my practice. In future practice, I plan to use familiar screening tools, but in their entirety, like the Preschool Orientation and Mobility (O&M) Screening Tool (Dodson-Burk & Hill, 1989), and the O&M Inventory (New Mexico School for the Blind and Visually Impaired, 2019). I also plan to use screening tools, which were new to me, like the Routines Based Assessment tool (McWilliam, 2003), and the Environmental Checklist for Developing Independence (Texas School for the Blind and Visually Impaired, n.d.). I plan to read more, learn more, and collaborate more with colleagues in order to use infant massage to support the child's concept development, and to promote effective team practice. I also plan to improve my FVA kit and use more nursery rhymes, coactive movement, and games to support the concept, social, communication, motor skill and O&M development of my preschool students with a vision impairment.

In conclusion, my results suggest that I could improve my practice as a consequence of journaling and conducting this action research project. Improvement in practice was achieved through:

1. Journaling about my personal experiences as a parent, and my professional experiences as an OT and O&M. I learned to recognize that these experiences are valid and connect me to O&M theory and best practices for pre-school aged children, who are blind and visually impaired. This has increased my confidence and ability to relate to other parents, and OT and O&M professionals.
2. Reading a published text and other related and credible information sources. My understanding of, and rationales for, early childhood O&M practice have increased. This has also increased my self-confidence, and ability to enact the recommended 'best practice' strategies in the future.

Limitations of the research

In regard to the limitations of this research project, as O'Connell and Dymont (2011) have noted, time was a challenge. I only had one month to complete my readings and journal, and I found myself moving on quickly to my next sub or sub-sub cycle of reading. Secondly, my learning process also only involved my own personal thoughts, and I was not able to discuss, debate (Palis & Quiros, 2014), or put into my practice my thoughts to enhance and consolidate my learning (Gravani, 2012). Receiving feedback from others may have filled gaps in my knowledge and answered the questions that I had (Palis & Quiros, 2014). In addition, if I was able to immediately apply my learning, this application with "real" clients may have helped to ensure that my attention and motivation in the learning process was maintained, and that I would be able to recall the new knowledge and skills (Gravani, 2012).). Being the only participant also meant that I was not able to quantify and generalize my learning within this project (Lindroth, 2014; Taylor & Kroth, 2009)

Conclusion

A number of researchers have explored how adults learn best, the benefits of reflective journaling as a learning tool, and early childhood O&M practice. However, none have explored all three topics in one study. Also, no study has previously developed journaling templates which document the learners' specific feelings, previous life experiences, critical thoughts, opinions, and ideas, before and after their learning. Given COVID 19, it may be timely for further research to continue in this area. Although this study clearly outlined an active and successful approach to self-directed learning, it did not identify the specific resources, interventions, or knowledge that all O&M specialists who are going to deliver services to pre-school aged children should implement or understand. Further research which explores the development of a specific self-study early childhood O&M curriculum tool for vision professionals may be helpful.

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Ethical considerations

No ethical issues were raised or considered in this project as it did not involve any other person in my research but the first author. Transparency was upheld in clear and detailed journal entries.

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Appendix A

Reference list for all the research 'sub' and 'sub-sub' cycles (one to ten) which were reviewed in the first author's reflective journal:

Book Chapter (Sub cycle):

Chen, D. (1999). Chapter 1 - Early intervention: Purpose and principles. In D. Chen (Ed.), *Essential elements in early intervention: Visual impairments and multiple disabilities* (pp. 3-21). AFB Press.

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Report: International Council for Education of People with Visual Impairment (ICEVI) - Frances Gentle, President, ICEVI (global); and Joanne Mosen (formerly Webber), President, ICEVI Pacific Region

We are pleased to submit this report for the SPEVI journal. SPEVI and ICEVI are membership organisations that promote the right to quality education for learners with vision impairment. ICEVI was established in 1952 and SPEVI in 1953, and the two organisations celebrate their 70th anniversaries in 2022 and 2023 respectively.

As 2021 draws to a close, the COVID-19 pandemic continues to impact our lives and the lives of the children and families we support. In countries with high vaccination rates, ICEVI members and partners have witnessed a lessening of the pandemic's disruptive impact on education services and programs. However, in countries with high infection and low vaccination rates, closure of schools and workplaces continues to disrupt family livelihoods and education services for children and young people with vision impairment and other disabilities.

This report presents a snapshot of ICEVI's global and Pacific activities during 2021.

World Blindness Summit, June 2021

ICEVI, in partnership with the World Blind Union and ONCE, the Spanish National Organisation of the Blind, hosted the World Blindness Summit in June 2021. The Summit was attended by over 3000 presenters and participants from 190 countries. It included the ICEVI and WBU General Assemblies, together with in-person and online presentations, meetings and webinars. Several of the webinar recordings are available on the [World Blindness Summit Madrid 2021 - YouTube](#) channel. The combination of an exceptional program and seamless ICT and language translation support provided by ONCE, ensured that the Summit was a world class event – and a memorable first virtual assembly for ICEVI and the World Blind Union.

The 2021-2024 ICEVI quadrennium commenced with the June 2021 General Assembly and appointment of the global and regional office bearers. We wish to acknowledge the substantive contributions of Ben Clare, the outgoing President of the Pacific region. Ben is well known across the Pacific and continues as an important member of the SPEVI Committee of Management and the Pacific ICEVI Executive.

Open access publications and resources

The [Mission of ICEVI](#) is to promote access to inclusive, equitable and quality education for all people with vision impairment. To progress the mission, ICEVI members and partners contribute to the creation of open access publications and resources which are available on the [ICEVI website](#). During 2021, ICEVI released

the January and July issues of [The Educator](#), and the January and June issues of [E-News](#). During 2020 and 2021, ICEVI released two “Include Me” resources for families and professionals who support children and young people with deafblindness and multiple disability. The [first Include Me](#) resource addressed the question of “Where do I begin” and has been translated into 23 languages. The [second Include Me](#) resource addresses the topic of braille literacy and includes practical suggestions for introducing braille to children with deafblindness and multiple disability.

In recent years, ICEVI has been building a substantive collection of open source instructional videos for teachers of mathematics. These are available on the [ICEVI mathematics YouTube channel](#). The purpose of the videos is to strengthen mathematics education for students with visual impairment. During 2021, an additional 150 instructional videos on the abacus were added to the YouTube channel. These videos include step-by-step demonstrations on using an abacus for addition, subtraction, multiplication, and division. There are also 166 videos addressing such topics as trigonometry, geometry, algebra, numbers, matrices, basic operations, decimals, fractions, inequalities, and more.

During the June 2021 General Assembly, ICEVI, in partnership with The Nippon Foundation and the Overbrook School for the Blind, launched [Partnerships for change](#). This publication chronicles the 30 year collaborative partnership between the three organisations in the East Asia region. In the opening section, authors’ Larry Campbell, M.N.G. Mani and Wenru Niu note “This is the story of a development program that spans more than three decades and addresses the challenge of fully including individuals who are blind within the education and employment sectors to which they have had limited access.”

Global and regional collaboration

At the global level and across ICEVI’s seven regions, online platforms and accessible digital technologies continue to provide an effective means of bringing people together for meetings, webinars and training workshops. As the global pandemic continues, accessible ICT has enabled ICEVI members to implement and monitor regional and local activities, and to maintain collaborative partnerships with United Nations agencies and the global disability community.

ICEVI is a member of the [Global Campaign for Education](#) (GCE), the International Communication Rights Alliance of [Deafblind International](#), and the Inclusive Education and United Nations working groups of the [International Disability and Development Consortium](#). ICEVI values its close partnership with the [Nippon Foundation](#) in implementing the higher education and employment project in the East Asia region, and its partnership with the DAISY Consortium in promoting the ICT Visionary Learning project in Africa.

We are pleased to announce ICEVI's appointment as a permanent board member of the [Accessible Books Consortium](#) (ABC). The Consortium is a public-private partnership led by the World Intellectual Property Organization (WIPO), with the goal to increase the number of books worldwide in accessible formats. ICEVI has been a Board member of ABC for several years and actively collaborates with other consortium members to promote the availability of books in accessible formats for students with vision impairment.

2021-2024 quadrennium ahead

The Boards of ICEVI global and the seven ICEVI regions are currently preparing their quadrennial plans and budgets. One of the initiatives is to establish thematic task groups to address the identified global priorities of early intervention, deafblindness, multiple disabilities, gender, advocacy, youth development and climate change. We will provide information about the task groups in the next ICEVI report.

Pacific Region

Throughout 2021, the ICEVI Pacific Board has convened various meetings and harnessed its partnerships in order to develop its 2021-2024 quadrennial plan. A strengths-based, iterative approach is being applied to the identification and delivery of all ICEVI Pacific activities. This means that the voices of people with disability are central in our activities, demonstrated by five of the 10 board members identifying as people who are blind or vision impaired. In addition, an iterative approach means that some activities will adapt or emerge over time in response to new priorities and partnership opportunities.

Three ICEVI Pacific members are representing the Pacific region on the SPEVI NZ 2023 Conference Committee. A number of meetings have already been held in 2021 and it is anticipated that there will be some informative presentations and positive attendance from the Pacific at this conference.

The ICEVI Pacific 'Scoping study of current services, resources and development priorities for the education of people who are blind or vision impaired in the Pacific' has been ICEVI Pacific's core 2021 activity with information from the scoping study report shaping further ICEVI Pacific strategic activities, opportunities and partnerships for 2022-2024. The ICEVI Pacific Board extends our gratitude to Deborah Rhodes and Mereoni Daveta for their outstanding and collaborative work in undertaking this study. The following is a brief overview of the scoping study with the full and summary reports located at www.icevi.org/pacific/.

The scoping study identified that in recent years there has been positive progress in terms of regional and national policies and plans relating to inclusive education throughout the Pacific. There is greater awareness of government responsibilities for educating all children and increased interest in committing resources for accessible

and inclusive education. Overall, there is great variety between Pacific countries in terms of accessible education services. In some, there are good services and experienced educators. In others, the chances of a child who is blind or vision impaired achieving educational milestones are very low. Across the region, there are now greater opportunities for children who are blind or vision impaired to achieve their potential, alongside their sighted sisters and brothers, than before. As inclusive education policies are implemented, and with increased understanding of the specific elements required for students with sensory impairments to achieve academic goals, then these opportunities will increase. Inclusive education has economic and social benefits for all, through reduced dependence on other family members and increased participation in employment.

The Scoping Study found some positive signs of effort and resource-allocation toward implementation of inclusive approaches and practices in primary and secondary schools for students who are blind or vision impaired. In several countries, education systems provide some level of adaptive technology, Braille, orientation and mobility and inclusive teaching strategies. At the tertiary level, universities, particularly in Fiji, and some technical and vocational education programs and providers are operating some inclusive and accessible services. There is shared agreement among those involved in education for children who are blind or vision impaired that there is more work to be done at many levels, to build on efforts to date and make the most of available opportunities. There are some highly experienced Pacific teachers and specialist service providers, existing networks, and some existing equipment, that can form the foundation for future collaboration and effort. Current services are generally located in major urban centres and not currently available in rural locations or outer islands.

In order to achieve improved educational inclusion for students who are blind or vision impaired, the following conditions were identified:

- A broad social, cultural and institutional context which supports inclusion, values education and incentivises educational achievement
- Committed leaders and officials in Ministries of Education, who are open to leading and driving change, learning, collaborating and supporting educational inclusion for people who are blind or vision impaired, consistent with regional commitments included in the Pacific Regional Education Framework (PacREF)
- Supportive parents, families and communities who recognise all of their children will benefit from accessing education and the whole community will benefit from their participation in all aspects of social and economic life
- Principals, teachers and school communities who support inclusion (as a concept and practice), are skilled in the provision of education for children

with sensory impairments and have access to specialist resources for this cohort of students.

- Explicit policies and strategies, skilled teachers, particular technologies, and supportive school communities, as well as ongoing efforts to provide resources and continuously support teachers and schools
- Confidence among parents that their children will be safe and welcomed at school.

A range of resources, strategic partnerships, communication, and training opportunities have been identified as the focus for ICEVI Pacific for 2021-2024, informed by scoping study findings. The development of a series of quick reference resources will be a key focus for ICEVI Pacific. Information will be collated, developed and translated into a number of national languages with a focus on advocacy, teaching strategies and parent information. This information will be developed in 2022 and then shared throughout 2022-2024. The resources will be used for parent information sessions, teacher capacity building, and awareness raising and advocacy activities. Four Pacific Islands will form the focus of our work for 2022 with further Islands to be identified for 2023-2024. Fiji and Kiribati have been identified as two islands that have made significant progress in vision impairment education where their learnings and activities can be documented and shared along with some targeted provision of support where ICEVI Pacific can partner with schools and ministries to further build on their successes. In addition, the islands of Tonga and Vanuatu have been identified as at the emerging stages of inclusive education practices where we can support opportunities to include children who are blind or vision impaired into their neighbourhood schools. ICEVI Pacific members have existing relationships with education programs and OPDs in these islands to guide our activities. Further islands will be identified in 2022 as our focus for 2023 and 2024. We will also build on or establish partnerships with the World Blind Union, Accessible Books Consortium, Global Partnership for Education and the Pacific Disability Forum to ensure alignment of activities with local priorities and to enhance existing programs in the region.

Sonokids Ballyland in 2021 – Phia Damsma



Sonokids Ballyland is a popular suite of accessible, educational software and game apps. Ballyland supports students' step-by-step building of fundamental skills for the STEM curriculum and skills of the Expanded Core Curriculum. Including: emergent keyboarding skills, VoiceOver concepts and gestures on iOS touch devices, and Computational Thinking & Coding. The Ballyland accessible eLearning platform currently consists of 14 apps: for Windows PC, iOS (iPad), and Android tablets. Digital learning is supported by specifically designed Ballyland tactile learning tools (2D and 3D).

A joint presentation by Professor Bob Marek (Hungry Fingers) and Phia Damsma (Sonokids) for the 2021 Tactile Reading Conference, 'Blending digital and tactile learning to develop skills for tactile reading', demonstrated the value of the Ballyland Sound Memory and Ballyland Code apps to teach navigation in a mathematical grid (with rows and columns), combined with tactile learning tools. The video recordings of this presentation and three tutorials for teaching with the versatile Ballyland Early Keyboarding software have been added to the Videos page of the Sonokids website.



Ballyland astronaut CosmoBally first featured in the free 'Ballyland CosmoBally in Space' app, which teaches facts about the planets in our solar system (115.000 downloads and counting). CosmoBally returns as guide on 'Sonoplanet', a new app-under-development. Phia presented the Sonokids method of Sonification of shapes, as proposed for this app, at the 2021 SPEVI, 2021 Round Table and 2021 VISCON conferences. Sonification is non-speech representation of data or information, and it has huge potential as an alternate format for access to visual data such as graphs and stats. A Sonoplanet demo was successfully trialed by students and conference delegates.

Building on that result, and with a funding contribution from SPEVI, Sonokids aims to complete this project in early 2022. The Ballyland Early Learning Sonification app will provide you and your students with an opportunity to explore and prepare for future use of sonification tools for access to STEM. Your feedback will provide valuable insights into challenges and opportunities in the use of sonification for access to information by young students who are blind or have low vision.

To keep updated, subscribe to the Ballyland Newsletter on www.sonokids.org

Email: support@sonokids.org

Inclusive Technologies Report - Leona Holloway, Monash University

Monash University is conducting an ARC Linkage project investigating the use of 3D printing for access to graphics by people who are blind or have low vision. The project aims to investigate when and how 3D printing is beneficial for touch readers, to support the uptake of 3D printing within the blindness community in Australia and New Zealand, and to create research-based guidelines. The application areas are education and orientation and mobility. The project is administered by Leona Holloway, with Chief Investigators Professor Kim Marriott and Dr Matt Butler (Inclusive Technologies, Monash University). Sonali Marathe (Round Table and NextSense Institute) and Debra Lewis (Department of Education, Victoria) are Partner Investigators helping to lead the project with a firm focus on practical community outcomes. Monash University PhD students Sam Reinders and Ruth Nagassa are also conducting research contributing to the project.

Based on our research findings and produced in collaboration with members of the Australia and New Zealand Accessible Graphics Group (ANZAGG), we have now released a series of guidelines on the Round Table website at <https://printdisability.org/about-us/accessible-graphics/3d-printing/>. These guidelines cover when to use 3D printing, where to find pre-existing models, recommended software to design your own 3D models, 3D printing services, labelling 3D models, preparing 3D prints for touch readers, touch reading 3D printed models, and how people who are blind or have low vision can do their own 3D modelling and printing.

Over the last year, we produced a range of educational models and games to support braille and tactile literacy, which are available for free download from <https://www.thingiverse.com/leonah/designs>. For orientation and mobility, we collaborated with O&M specialists to design, test, and release 3D models for teaching street crossings.

The ANZAGG 3D printing group continued to meet monthly, sharing practical tips and hearing from international guest speakers. New members are always welcome. We also shared our work at a range of conferences for accessible format producers, vision specialist teachers, orientation and mobility specialists, and technology researchers.

The project will be extended into a fourth year as a result of underspending during the pandemic. We have big plans for our final year, with a focus on completing the guidelines on designing 3D models for touch readers and gathering formal feedback on the use of 3D printing in schools. Teachers who wish to test our 3D printed or augmented models are warmly invited to contact us via Leona.Holloway@monash.edu.

Our thanks are extended to our project partners and funders: The Round Table on Information Access for People with Print Disabilities Inc., The Department of Education Victoria, NextSense Institute, Guide Dogs Victoria, Royal Blind Society, VisAbility and SPEVI.

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SPEVI Conference 18- 20 January 2023



Nau mai haere mai

Nga mihi nui ki a koutou katoa

Welcome

Greetings to you all

You are invited to be part of the next biennial **SPEVI Conference 18- 20 January 2023**

This is an online conference offering exciting opportunities to present, learn, share, network and experience everything that is uniquely SPEVI

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<https://www.spevi.net/>

For direct enquiries contact spevinz@gmail.com

About SPEVI

The 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 persons who are blind, have low vision, deaf-blindness, or additional disabilities. SPEVI membership is open to educators, professionals and parent groups who support and promote education for persons with vision impairment.

SPEVI Inc. is an Association incorporated under the laws of NSW, Australia – Registration number INC9889733.

SPEVI Vision

To promote educational systems in Australia, New Zealand and the South Pacific in which diversity is valued and disability is not viewed as a characteristic by which to judge a person'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 persons who are vision impaired, while emphasising concepts of inclusive, responsive educational communities and interdependence between learners and families within those communities where all people are valued.

SPEVI Aims

- To be recognised as the professional body of educators whose specialty is in matters pertaining to the education of persons with vision impairment in Australia, New Zealand, and Pacific Island Countries.
- To advocate on behalf of members, persons with vision impairment and parents/carers for equitable education access and participation, in accordance with international and national disability anti-discrimination legislation.
- To encourage the highest standards in the educators of persons with vision impairment by promoting research and professional training for general and specialist teachers.
- To promote and facilitate the interchange of information and collaboration among educators, professionals, parent groups and the broader community concerning education and equal opportunity for persons with vision impairment.
- To encourage the use of appropriate mainstream and assistive technologies, resources and optical and non-optical aids, in the education of persons with

vision impairment, and to promote teacher education programs in the use and care of existing and new techniques and technology.

SPEVI Structure

SPEVI operates at two levels:

- National level, by means of the Committee of Management;
- Local level (state/territory), by means of a Branch comprising SPEVI Councillors and members who reside in the location.

SPEVI Code of Ethics

- All members of SPEVI will:
- Work for the good of SPEVI and actively support and promote its Aims as defined in the SPEVI Constitution;
- Act honestly and with respect and integrity at all times;
- Provide leadership for all members of SPEVI to foster high ethical standards;
- Act to enhance public awareness of SPEVI's objects; and
- Maintain transparency of decision-making within SPEVI.

Committees of Management

SPEVI is managed at the national level in Australia and New Zealand by a Committee of Management. The national Committees, subject to SPEVI's Constitution and to any resolution passed by SPEVI in general meeting, are responsible for the governance and management of the activities of the Association and its members. The Australian Committee manages and supports Australian and the Pacific Island members.

Australia Committee of Management, 2019 - 2020

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For a full list of Australian SPEVI Councillors, please visit the SPEVI website:
www.spevi.net

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