Catering for specialized needs of students with vision impairment in mainstream classes:
Listening to students' voices for academic, physical and social inclusion

Melissa Fanshawe
University of Southern Queensland, Australia

Melissa Cain
Australian Catholic University, Australia

ABSTRACT

Thousands of students with vision impairment or blindness attend mainstream schools in Australia. Their experiences depend on multiple pertinent factors, including teachers' understanding of the legal requirements to abide by the inclusive education agenda, schools' understanding of the nature of vision impairments, and the challenges they present to learning. Educators' willingness to take on advice regarding adjustments to the curriculum, assessment, technology, and learning environment are also critical to success for such students. This chapter puts forward the voices of students with vision impairment or blindness to provide a picture of the types of alternative formats used in schools today, including braille and assistive technologies. The voices share how important it is for students to be included in all areas of their education to achieve a sense of belonging and acceptance affording them true inclusion. A list of practical recommendations to assist teachers encourage inclusion academically, socially, and physically is detailed in this chapter.

Keywords: Adaptive technology, Blindness, Independence, Inclusion, Expanded core curriculum, Student voice, Vision impairment, Visual Fatigue, Well-being.

INTRODUCTION

Teachers in Australia report feeling stress and strain from the ever-increasing responsibilities of their profession (Feltoe, Beamish & Davies, 2016) such as negotiating curriculum changes, meeting professional development demands, and satisfying accountability requirements through constant data gathering and analysis. Recent research indicates that up to 50 percent of Australian teachers leave 'burnt out' and within the first five years of joining the profession (Bennett, Newman, Kay-Lambkin & Hazel, 2016). In addition, educators in Australia are required to teach in an inclusive manner and be knowledgeable in making appropriate and effective differentiation decisions for each of their students (Forlin & Chambers, 2011). Unless they are recent graduates, most Australian teachers may not have had any pre-service education around the practicalities of inclusive education, and little-to-no professional development in this area.

The number of students with disabilities being educated in Australian mainstream schools has grown significantly over recent years (ABS, 2011). However, successful implementation of the legal and ethical requirements of inclusive education remains a challenge for many teachers (Round, Subban, & Sharma, 2016). Teachers' increased workload and the pressure to satisfy accountability requirements leaves little time for them to know their students and how they learn. Teachers also lack time to gather background knowledge about specific disabilities and learning impairments, and research appropriate ways to differentiate for students with special needs. While teachers new to the profession generally report positive feelings towards teaching students with special needs, attitudes are noted to decline significantly after one year of teaching (Hoskin, Boyle, & Anderson, 2015; Boyle, Topping, & Jindal-Snape, 2013). Many teachers feel inadequately prepared to address the obligation to cater for a diverse range of student abilities and to assume responsibility for their needs (Forlin, Keen, & Barrett, 2008). Such apprehension about teaching in diverse contexts usually centres on limited ability and experience in adjusting the content, process of teaching, assessment, and learning environments successfully. A study of Victorian secondary school teachers' attitudes about teaching in inclusive classrooms by Round, Subban, and Sharma (2016) revealed that time-poor teachers described inclusion as a burden because it was perceived to create additional workload, with limited resources and para-professional staff available to support effective inclusion.

For students with vision impairments, inclusion in the mainstream classroom can seem overwhelming as the curriculum is designed for those who can see (Telec, Boyd, & King, 1997). Curriculum content is primarily displayed in a visual format, along with a range of other important information such as expected behaviour standards and visual timetables. Teachers often provide instructions using visual cues (such as pointing or a nod of the head), and students will indicate their willingness and ability to participate in instruction through raising their hand and giving feedback using facial expressions. Students with vision impairment may not be aware that the teacher is looking at them, has pointed to them, or has given them an encouraging smile (Opie, 2018a).

To the knowledge of the authors, there are few studies (Brown, Packer, & Passmore, 2013; Jessup, Bundy, Hancock, & Broom, 2018; Morris & Sharma, 2011 Opie, 2018a; Whitburn, 2014) which examine the experiences of students with a severe vision impairment in Australian mainstream schools. The aim of this study was, therefore, to provide a multifaceted description of lived reality "through the eyes of the participants" (Cohen, Manion & Morrison, 2000, p. 183). The research question to guide the study is: *What do students with vision impairment and blindness need to feel included in the academic, physical, and social realms of the mainstream school environment?* To frame these issues and to provide coverage of essential content knowledge needed to navigate the special needs of such students, the authors review recent literature on the nature of vision impairment and the ways in which vision impairment impacts learning physically, socially, emotionally, and academically. The chapter then discusses recent research by the authors with students with a vision impairment in mainstream schools in Australia. This research promotes the voices and lived experiences of such students, leading to recommendations for how they can be best assisted to experience their learning successfully and to the same extent and high expectations as their peers.

LITERATURE REVIEW

What is Vision Impairment?
A vision impairment is classified as "damage or disease to the eye or visual system and is considered as a disability when it cannot be corrected with the use of glasses or medication" (Cain & Fanshawe 2019b, p. 1). A person can be diagnosed as having a vision impairment by either having a reduced visual acuity and/or reduced visual field. According to the International Classification of Diseases 11 (World Health Organisation [WHO], 2018) visual acuity differs in severity:

- Mild: visual acuity worse than 6/12
- Moderate: visual acuity worse than 6/18
- Severe: visual acuity worse than 6/60
- Blindness: visual acuity worse than 3/60

A person with a visual acuity of 6/60 can see at 6 meters what a person with unaffected sight can see at 60 meters. In Australia, 6/60 visual acuity or worse is the definition of legal blindness. A person can also be considered to have a vision impairment if their visual field is less than 20 degrees, or they have a cortical vision impairment caused by brain injury, which does not enable their brain to understand the meaning of the images sent from the visual system (RIDBC, 2014).

A vision impairment can be caused by damage or disease to different parts of the eye or untreated refractive errors that cannot be corrected with glasses or contacts (Deloitte Access Economics, 2016). A vision impairment can be congenital (from birth) caused by genetic disorders, intrauterine trauma, and perinatal conditions such as brain injury or due to prematurity. Vision impairment may also be acquired through deterioration of a known condition, accident, trauma, or cancer (Gilbert & Foster, 2001). According to Foreman et al. (2014), Indigenous Australians and those in low socio-economic areas are more likely to have a vision impairment due to undiagnosed refractive errors, poor maternal health, and low uptake of infant eye screening (Deloitte Access Economics, 2016).

Within mainstream Australian schools, it is estimated there are approximately 4,000 students with vision impairment (Opie, 2018b) with only 320 students identified as having a severe vision impairment or blindness (Deloitte Access Economics, 2016). In classrooms, barriers exist for students with vision impairment as the physical space within the school, curriculum, and assessment are designed for those who can see (Morris & Sharma, 2011). From birth, learning opportunities are incidentally acquired through visual information (Ferrell, 2011) and a lack of visual stimulus from birth may effect motor development (rolling, crawling, walking), cognitive development (concept development) and social development (facial expressions and modelling of behaviours). Young children with vision impairment require explicit teaching through routines and contextual experiences (Ferrell, 2011) to support early development in these areas (Lueck, Erin, Corn, & Sacks, 2010).

In Australia, eye examinations are made available through infant and child development checks, with concerns then referred to specialists for investigation (Deloitte Access Economics, 2016). Despite this, only 72% of vision impairments are diagnosed in a child's first year (RIDBC, 2014). Thurston (2014) estimates up to one-in-five children have undiagnosed refractive errors prior to entering school, which means teachers could be the first to alert families of potential visual issues. Australia has recognised the importance of early detection to avoid long-term vision impairment and associated impacts on academic progress with some states introducing screening for students in early years classrooms (Victorian Government, 2019).

Visual Fatigue

The high number of students requiring corrective glasses raises questions about the impact of digital technologies on eye health as screen time continues to increase for all age groups (Rosenfield, 2016). Since the 1980s, the time spent on devices such as laptops, tablets, and mobile phones has increased rapidly, with even small babies being given devices to entertain them. It is estimated that children spend over two hours a day interacting with screens (Vision Council, 2016), and this increases for students in secondary school who use devices in classrooms and for homework, as well as social interaction, gaming, and streaming videos or watching movies. Visual fatigue occurs when eye muscles strain through visually intense tasks or repeated viewing at a close distance, which increases the demand on the eye to accommodate the image (Sheppard & Wolffsohn, 2018). This can cause ocular migraines from glare and flickering lights, as well as dry eyes, affecting long-term eye health (Moon, Lee, & Moon, 2014). Teachers should be alert to complaints of headaches, dizziness, red or watery eyes, excessive blinking, and poor hand-eye coordination, as well as behavioural signs, such as losing place in a paragraph, holding the book close to the face, head tilting, rubbing eyes, shaking eyes and difficulty

copying from the board. A timely diagnosis will give the best possible chance for a child to access support and referral to intervention if required (Anthony, 2014; Janus, 2011).

How Does a Vision Impairment Impact a Student's Education?

The impact of a vision impairment will depend on the cause and severity of the vision impairment, age of onset, and presence of other disabilities. There are other pertinent factors such as a student's personality and capabilities, as well as access to early intervention and family support. Some students' vision may also fluctuate in circumstances of glare, visual fatigue, or through a cortical vision impairment caused by brain damage (RIDBC, 2014). Students with vision impairment can often use their limited vision to make meaning in their environment, by using their memory and/or other senses in new situations. The way the student uses their vision within their environment is known as functional vision (Telec, Boyd, & King, 1997).

Physical impacts

As mentioned, motor skills, speech, cognitive, and vestibular development may be delayed for students with congenital vision impairment (Telec, Boyd & King, 1997). For students with a marked difference in vision between the two eyes, lack of depth perception can create perceptual uncertainty, affect hand-eye coordination, and balance (Ekberg, Rosander, von Hofsten, Olsson, Soska, & Adolph, 2013). Moving through the classroom or school with reduced sight can be challenging as many students find gauging the depth of steps, uneven terrain, and navigating through the school difficult. This can be further emphasised by the number of people, glare, and changes of gradient. Orientation and mobility instructors work with students with verified vision impairments to assist them to independently navigate through the school, as well as to and from their homes (Opie, 2018b). This professional assistance is essential for success for students with a vision impairment to safely engage in their environment. Independent travel skills have been found to be predictors of future employment (McDonnall, 2011), thus learning such skills within the school environment is a precursor for gaining confidence in navigating the world as an adult.

Depending on their level of vision, students with vision impairment may need seating close to the front of the room to see the whiteboard, and curtains or blinds in place to reduce glare on their work. Trip hazards such as chairs, bags, and other students may not be seen by the students. Recent research (Cheryan, Zieglar, Plaut, & Meltzoff, 2014) has shown that "symbolic features (e.g., everyday objects that signal who belongs in the classroom) can facilitate or hinder student learning and achievement" (p. 4). The researchers found that placement of posters, rules, and procedures in the classroom can affect classroom culture. For students with severe vision impairment or blindness, this symbolic architecture is not necessarily accessible.

Physical activity and social inclusion in team sports is an important means of creating a sense of belonging (Lieberman, Haegele, Columna & Conroy, 2014). Studies by Stuart, Lieberman and Hand (2006) have found that students with vision impairment are less likely to be active and participate in sports than their peers, with the lowest rate being for those who were blind. Physical education is important for all students. Games can be adapted for students with vision impairment through the inclusion of audio cues. Sports created specifically for people with a vision impairment, such as goalball, can be enjoyed by every student and should be encouraged in the mainstream learning environment.

Social impacts

Self-concept is a person's perception of how others view them (Rosenblum, 2006). As such, ensuring appropriate behaviours, social skills, and encouraging social inclusion is essential to help develop a healthy self-concept for students with a vision impairment. Levin and Rotheram-Fuller (2011) found that students with vision impairment can have weaker self-concept, which is directly proportional to the severity of the vision impairment. Students with vision impairment may not want to use a white cane, adaptive technology, or braille in class, as they feel this highlights differences (Thurston, 2014) and isolates them from their peers (George & Duquette, 2006). Students who have a severe vision impairment

or are blind may lack the social skills and competence to effectively interact with other students (Zebehazy, & Smith, 2011). This may be due to the inability to recognise other classmates, not knowing where friends are to initiate conversations or standing within personal space due to an inability to see these social norms modelled. Some students with low vision may have socially inappropriate behaviours, such as eye poking (pushing on their own eyes, which creates stars in their vision) or flapping their hands. However, such behaviours should be discreetly discouraged to ensure behaviour is socially acceptable and age appropriate (Rosenblum, 2006). A student's personality, their emotional adjustment, and their ability to advocate for their own needs may also affect how others view them (Ihrig, 2013).

Academic Impacts

Students with vision impairment have reported feeling anxious about their ability to cope with their academic workload (Ihrig, 2013). For these students, the use of braille, enlarged print and screen readers takes longer to access content than for sighted students. Certain objects such as pictorial representations, maps, symbols, graphs, tables, and diagrams are commonly found in subjects such as Mathematics, Science, Visual Art, Geography, and History. These are more difficult to access through the methods that students with a vision impairment use (Rule et al., 2011). Images and multimedia presentations, if not described with alternate text or audio-description, are often inaccessible to students with severe vision impairment or blindness. Additional time is required to make meaning of these formats for students to achieve an understanding similar to their fully sighted peers.

Training for Inclusivity

The Disability Discrimination Act (Australian Government, 1992) and the Disability Standards for Education (Australian Government Attorney General's Department, 2005) mandate that education facilities provide the same opportunities for all students. To comply, educators may need to make adjustments to the presentation or delivery of curriculum so that students with disabilities are able to access education at the same level and on the same basis as their peers (Australian Government Attorney General's Department, 2005).

Although they may understand the 'why' of inclusive education, the majority of teachers currently in the profession have had little training in 'how' to effectively differentiate their teaching (McLinden, Douglas, Cobb, Hewett & Ravenscroft, 2017). Initial teacher education courses in Australia only recently began including subjects aimed at a broad introduction to inclusion and differentiation, and within a typical teaching period are only able to cover surface content about a wide variety of issues pertaining to cultural, linguistic, and special needs inclusion (Brown, Packer, & Passmore, 2013; Cain & Fanshawe, 2019a). It is unlikely that teachers have personally experienced the adaptive technologies used by students with vision impairment and may have had little training on the devices prior to use in their classroom (Opie, 2018b). Additionally, they may have had little experience assisting a student with vision impairment to access the curriculum (Thurston, 2014). It is not surprising therefore, that teachers may feel overwhelmed by the needs of students with diverse needs in their classroom and their ability to cater for them successfully (Jessup, Bundy, Broom, & Hancock, 2017).

The field of visual impairment "is privileged that specialised support services exist for people with vision impairment" (Brown, Brown, & Glasser, 2013, p. 406). This includes access to an Advisory Teacher for Vision Impairment available within all states of Australia (Hollier, McGrath, Scott, Varley, & Woodford, 2013). Although these teachers may be known by different names in different States and Territories, all Advisory Teachers have been trained and have experience working with students who are blind or have low vision. Their role is to support students within schools, provide professional development for teachers and teacher aides, and make suggestions for modifications that can be made to access the curriculum and environment (Opie, 2018a).

CATERING FOR THE NEEDS OF STUDENTS WITH VISION IMPAIRMENT IN THE MAINSTREAM CLASSROOM

Methodology

The research project centered on hearing the voices of students with a vision impairment to uncover their everyday experiences in accessing mainstream education in Australia. The authors interviewed 15 students—three girls and 12 boys in the state of Queensland, Australia along with their parents or carers. The participants were aged between 10-15 years and attended a variety of Government, Private, and Catholic primary and secondary schools. Interviews were conducted in person, by telephone or through online meeting software. The nature of participants vision impairment ranged from no sight at birth, to sudden vision loss in recent years, with causes being related to genetic errors, accidents and trauma, and other health conditions, such as tumours. Their experiences in mainstream schooling ranged from very positive with responsive teachers employing creative and effective support, to particularly negative including constant bullying and a serious lack of support for their disability.

Students were asked a set of 40 semi-structured questions that were conversational in nature and encouraged extended answers as participants reflected on their personal experiences of schooling. The questions were divided into four major categories—the nature of the participant's vision impairment; everyday experiences at school; pedagogical adjustments and differentiation; and the impact of teachers, parents, friends and role models—and are attached to this chapter in Appendix 1. All interviews were recorded and transcribed verbatim. The researchers then extracted themes by hand through colour coding, linking themes through a 'mindmap'—a graphic representation noting the relationship of the themes. The following section unpacks the results of conversations with participants and relates the four most common themes identified in the data.

In order to acknowledge the subjective understandings of the individual participants, the authors employed an interpretivist paradigm and a phenomenological approach (Sokolowski, 2000). Descriptive case study methodology allows for a focus on phenomenon in real world contexts, and as such was chosen as the most appropriate approach (Creswell, 2015). This methodology was selected not only to measure the experiences of the participants, but also to identify key areas for future research as a response to the significant gap in the literature on this topic.

The authors acknowledged that they approached the data collection with some unavoidable subjectivity. As active volunteers in the low vision community and mothers of children born blind, they accept their emic perspective and role as cultural insiders in this investigation. Researcher bias was given careful consideration and the authors were not directly involved in the data collection. They were, however, able to contribute considerable knowledge and experience to the data analysis and discussion. Participant recruitment and interviewing was undertaken by members of a national organisation extremely knowledgeable about the nature of vision impairments, the impact of vision impairment on learning, and the variety of technologies and strategies currently in use in educational environments. Approval of the research project was provided by the Human Research Ethics Committees at the researchers' universities prior to the commencement of the fieldwork. Special care was taken to protect the privacy of participants for whom pseudonyms are used in the presentation of the data. Students and their parents/carers were provided an information package and both groups signed consent forms before the research began.

DISCUSSION AND ANALYSIS

The principles of inclusive education focus on meeting the unique needs of individual learners and this was evident in the four themes. The results demonstrated that students with vision impairment wanted to be seen as a person first, they wanted to be independent, that social inclusion was extremely important, and that accessibility to a full and equitable education was possible. These four themes are detailed in the following discussion.

Theme One: 'Treat me as a student first and teach to my strengths'.

Overwhelmingly, the participants indicated that they wanted their teachers and friends to see them for the person they are first and foremost, and not focus on their disability. Each student wanted to share their talents, interests, and abilities.

For example: *"I'm a good reader". "I'm quite an active learner". "I have high expectations [for my learning]. "I am a sporty kid". "I enjoy music and I play drums in the band"; and "I'm not very good at math".*

As vision impairment is such a low incidence disability, most teachers are unlikely to have had experience with students with low vision and may feel underprepared to assist them in the classroom (Brown, Packer, & Passmore, 2013). They may focus on the disability and make assumptions about what the student needs. Hollins (1989) notes that "Unrealistic attitudes toward blind people (sic) arise when sighted people who don't know much about blindness rely on their own intuition, mixed perhaps with misinformation passed along by others or derived from popular culture, in forming their opinions on this subject" (p. 101). This can also lead to teachers operating from a deficit view (highlighting the disability) rather than focusing on the strengths of the student. The first of the Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2014) requires teachers to 'Know students and how they learn'. This must include students with vision impairment. By taking time to understand each students' needs, interests, and abilities, teachers can gain insights into the most effective curriculum delivery for everyone in their class.

Theme Two: 'I'm capable of doing things independently'.
Most of the students interviewed felt their teachers treated them equally to their peers, although their comments indicated that they were actually given fewer opportunities. One primary school student, Brad, stated: *"I am not allowed to play on the monkey bars because it's too dangerous".* Brad often felt left out of social activities as his teachers preferred to separate him rather than find inclusive ways for him to participate in all activities. Another secondary school student, Luke, had similar observations: *"I feel like the teachers are apprehensive because they don't know my vision impairment".* Research shows that participation in all areas of the curriculum is essential for positive holistic development and so our learning environments should allow for independence and high expectations for all students (Beardslee, Watson Avery, Ayoub, Watts, & Lester, 2010; Cain & Fanshawe, 2019b). Students with a vision impairment need to have the same opportunities to learn and develop skills required for their future as their peers. A primary school student, Abigail, revealed that *"I don't get to do any jobs".* Restricting participation in classroom activities for students like Abigail does not allow them to develop independence and may lead friends and teachers to believe they are not as capable as their peers.
Relatively simple issues, like giving some thought to how instructions are delivered, can significantly change classroom dynamics. For example, John told us that his teacher said: "*You need to go over there, and I'm like, 'uh, where are we going, Miss?'".* Jakob suggested a simple solution to a problem faced by many students with vision impairment: "*if the teacher said my name, it'd make it a lot easier, instead of me having my hand up and not realising that I'm meant to speak".* Restricted access to non-verbal cues hinders both critical conversation information and emotional expression (Brambring, 2007; Iverson & Goldin-Meadow, 1997) limiting the child's access to "what is in others' minds, even in the context of perfect linguistic comprehension" (Peterson, Peterson, & Webb 2000, p. 445). Understanding that the majority of communication occurs non-verbally, making adjustments to describe non-verbal signals can make a significant difference for students with a vision impairment.
There is a large body of research (Rosenblum, 2006; McDonnall, 2011; Whitburn, 2014; Wolffe & Kelly, 2011) which promotes that students with vision impairment should be held accountable to the same academic, behavioural, and social standards as their peers. This is important as students will eventually be competing in the same job market and will not have diminished responsibilities because they have a disability (Holbrook & Koenig, 2000). Creating learning environments that allow students independence and inclusion in age appropriate activities should be provided in a manner that can be

achieved successfully (Beardslee et al., 2010). Thurston (2014) reminds educators that having high expectations of work quality for students with vision impairment encourages students to be able to set goals which then positively influence self-concept when these are reached.

Theme Three: 'Social Inclusion is important for my well-being'.

Creating opportunities that are designed with social inclusion will create a sense of belonging in the school setting, essential for positive social development (DeCarlo et al., 2012). It is important for all students to belong and feel accepted. John, who recently began secondary school and who is an accomplished sportsman often representing his state, demonstrates that he is not immune to the comments made by others regarding his social inclusion in sporting activities at school: *"I often hear, [the other students] say things like 'why do we have to have this kid, because if we have him on our team then we have to use a special ball".* Purposeful development of a school culture where diversity is celebrated rather than viewed as an inconvenience helps students to understand and appreciate differences. Brittney offered an idea for improving her social inclusion: *"It would be easier if my classmates had an understanding of my vision impairment and how much I could see".* Students like Brittney should be given opportunities to offer ideas for their inclusion, to help them develop the confidence to advocate for themselves both as a student and later as an adult (Jessup et al., 2018).

Understanding the needs of students with a vision impairment can also help shed light on perceived behavioural issues. Shane, a high school student, explained *"I get chatty because I can't see, and I get bored".* When, for example, Shane's teacher played a movie for the class, Shane lost interest quickly, as there was no audio description provided and he was unable to follow the storyline of the movie. Shane proceeded to take out his phone and entertain himself with games and chat with his peers, ultimately getting in trouble for these actions. Had the teacher chosen a movie with audio description, Shane could have been included and be able to participate in the discussion that followed the learning activity. Placement of students in the classroom to cater for their specialised equipment can also inadvertently impact social inclusion. Kate's mother told the interviewers that Kate was the only one in her class who had an assigned seat because she had her equipment "*which required two desks and another computer*" and meant she was away from her friends. Brown, Packer, and Passmore (2013), who examined the experiences of students with vision impairment in Australian mainstream schools, also found instances when "aids act as barriers to social interaction" (p. 224). Therefore, it is important to consider the design of the learning environment to ensure positive academic, physical, and social inclusion.

In their research of students who were blind or had low vision in Victorian secondary schools, Jessup, Bundy, Hancock, and Broom (2018), reported that the students interviewed felt a sense of inclusion due to their ability to make friends. The authors' research found similar responses. When asked 'what helps you be involved and participate in school?' Daniel replied, "*I think friends all around me...I mean I have a good friendship group*". When asked what made it difficult to participate, he responded "*there's some kids that bully me*". Other researchers have documented the bullying of students with vision impairment (cf. Jessup, Bundy, Hancock & Broom, 2018; Thurston, 2014; Wolffe & Kelly, 2016). According to three teachers interviewed, students with vision impairment sometimes show behaviours that are not considered socially appropriate and which may prompt other students to respond negatively. Kate's classroom teacher told us that "*Kate doesn't want to be different, she wants to be the same as everyone else. But Kate's struggling with friendships because she does not get the subtle messages from her friends".* It is important to address these social barriers to inclusion as "rejection and isolation…can result in a poor long-term psychological outcome" (Jessup et al., 2018, pp. 35-36).

Kelly and Wolffe (2012) found that explicitly teaching social skills is as equally important as academic achievement in gaining meaningful employment. People with vision impairments who were able to interact appropriately with their peers and demonstrated socially acceptable appropriate behaviours were more likely to gain and maintain employment in the future (Bishop & Rhind, 2011) and develop a positive self-identity (McDonnall, 2011). Social skills need to be explicitly taught to students

with a vision impairment as they are unable to see body language, facial features, or the social nuances noticed by sighted students.

Theme Four: 'Give me time and use accessible design and chances are you will be helping other students too'.

Recent technological developments have resulted in meaningful advances for students who cannot access print through traditional methods. Access to the curriculum can be greatly enhanced through the use of technology such as tablets, laptops, and refreshable braille machines. If a document is formatted correctly, electronic braille readers and screen readers can simply read out all the printed information for students. However, this often relies on the teachers' knowledge of how to use such technology, and according to Kamei-Hannen, Howe, Herrera, and Erin (2012) this can be overwhelming for most classroom teachers.

What impressed the interviewers and researchers was the comprehensive toolbox of digital solutions that students had developed to assist their inclusion in the classroom. Many of the strategies were provided by Advisory Teachers (experts with knowledge on the latest technological advances to assist students with print disabilities), but some of the most creative solutions were developed by the students themselves researching their unique needs online. While many teachers were open to implementing alternative digital tools and applications, most were unaware of the options available through the use of mainstream technologies (iPads, mobile phones) such as voice-to-text and screen readers and were hesitant to change their teaching methods to include these popular technologies. This is concerning considering "preparation for today's workforce and higher education classrooms necessitates training with the Internet and widely used high-technology tools" (Kelly & Wolffe, 2012, p. 606). Taking time to learn about devices and applications is a helpful start, but having the students trained and responsible for their own access develops independence, self-advocacy, and problem-solving skills (Jones, Rudinger, Williams, & Witcher, 2018).

It was clear from the interviews that students with vision impairments knew what they needed to enable them to participate in class. While the students utilised these solutions confidently in their everyday lives (for example, to navigate environments, access bus timetables, or cook meals), they said that their teachers often provided the solution themselves instead of asking the students what worked best for them. When we asked our interviewees why they did not offer up their own solutions, they said things like: *"to be honest I don't really tell them, it's only a hassle for them"*. *"Only when it's really important, I tell them"*. *"I have to teach them how to help me. I wish they would just ask"*. Comments from our participants confirm that they needed additional time to access information in braille and through using screen readers. Abigail offered: *"The teacher might say: 'do questions 8-16, and whatever you don't do is your homework'. So, I might get up to question 10 and everyone else has no homework"*. For more effective delivery of content, teachers can add audio description or tactile graphics to images and diagrams. Even better, it would it be optimal for *all* students to have access to 3D printed models to make meaning through tactile means. Providing electronic documents in an accessible format free of clutter makes access easier for all students in the classroom. Accompanying this should be consistent high expectations for all students so that students with vision impairments access education on the same basis as their peers. When given a chance to offer solutions, Sarah noted that: "*teachers ask me if 'Is it better if I email you this image or worksheet, or would you like to access it the way everyone else accesses it through OneNote?' ...I like being given that choice*".

SOLUTIONS AND RECOMMENDATIONS

Interviews with students with a vision impairment made clear that they wished to be meaningfully and purposefully included in all aspects of the educational experience. They were confident that relatively minor changes in pedagogy and the acceptance and inclusion of digital technologies and applications would support an improved experience. Students with a mild or moderate vision impairment may require

small adjustments in content presentation, teaching pedagogy, or the learning environment to access the curriculum. Recommendations of these types of adjustments that teachers can implement in the mainstream classroom are proposed here. Examples of such modifications are listed in Table 1, compiled by Cain and Fanshawe (2019b, pp. 14-15).

Table 1. Suggested modifications for students with vision impairment

Access to Information	
Writing	● Ensure contrast, font, size, clutter, and line spacing is legible; ● Minimise unnecessary copying of tasks; ● Use 2B pencils or black marker pens for recording; ● Use large font on the board or interactive whiteboard; ● Place posters and other visual prompts around room within visual fields.
Textbooks	● Implement the affordances of The Marrakesh Treaty set in June 2013 (World Intellectual Property Organisation, 2013). This treaty provides a relaxation on copyright laws for people with a print disability, which allows all materials from textbooks to be provided by the publisher in electronic format. Teachers can then enlarge these documents to a visible size.
Technology	● Allow learning activities and assessment to be completed on a computer; ● Promote inbuilt accessibility options or preferred settings to enlarge font; ● Train students in 'shortcuts' for quick access to system commands; ● Develop keyboarding skills and touch typing to allow for typed responses.
Digital media	● Ensure font is large, use contrasting colours and avoid clutter; ● Do not use text over images; ● Use the 'alt text' function to describe photos or other visuals.
Auditory skills	● Teach students listening skills, note-taking skills, and skills to summarise; ● When facilitating discussions, use student names, summarise comments and ensure any non-verbal messages are made explicit.
Assessment	● Provide different ways for students to demonstrate their

	knowledge; ● Provide timely and constructive feedback in a style preferred by the student: written, typed, auditory.
Visual fatigue	● Employ the '20-20-20' rule to maintain eye health; after 20 minutes of screen time, you should look for 20 seconds at something 20 feet away (6 metres) (Rosenfield, 2016); ● Provide ways to reduce cognitive load and assign realistic workloads and homework tasks.
Organisation	● Plan ahead to have materials prepared or emailed for accessibility; ● Teach students how to organise materials in the same place for quick access; ● Teach students how to use files on the computer to store information.
Environment	
School Culture	● Ensure achievable expectations of academic curriculum; ● Foster a safe, supportive and inclusive environment and promote independence; ● Encourage students to advocate for the ways they learn best; ● Support students to develop social inclusion through positive friendships and a sense of belonging.
School grounds	● Highlight any hazards in the environment such as steps by using yellow strips; ● Cover drains and other trip hazards.
Classroom Organisation	● Organise the classroom to allow sufficient space for ease of access; ● Consider lighting that is bright enough but does not produce glare; ● Plan the layout of desks to ensure all students have good access to the board.
Pedagogy	● Use explicit verbal instructions so students are aware of what is happening and when; ● Verbalise writing when placing it on the board; ● Ensure examples are modelled and scaffolded; ● Aim for equitable learning experiences for all students.

The Expanded Core Curriculum (ECC)

The *South Pacific Educators of Students with Vision Impairment* (SPEVI) (2004) believe that students with vision impairment should be explicitly taught skills that enable them to meet the core curriculum. Known as the *Expanded Core Curriculum* (Hatlen, 1996), these areas assist to compensate for what is incidentally gained by students with regular vision.

The nine areas include:

- assistive technology (such as use of magnifiers and iPads),
- compensatory skills (braille, handwriting skills),
- sensory efficiency (tactile and auditory skills),
- orientation and mobility (safe and efficient travel),
- social interaction skills (predictors on personal life and future employment),
- career education (types of careers and specific skills required),
- recreation and leisure skills (what recreation is available and how to access it safely),
- independent living skills (cooking, getting dressed), and
- self-determination (self-advocacy, problem solving and independent responsibility).

Despite literature strongly espousing the importance of the ECC for students with vision impairment (Lohmeier, 2009; Opie, 2018a; Wolffe & Kelly, 2011), there is continued debate around who is responsible for its implementation, what needs to be taught, and how the ECC can be managed in a mainstream school environment. There lacks a national standardised scope, sequence and assessment for the components of the ECC, as well as a lack of time for Advisory Teachers to facilitate the implementation of this in schools. More research about and support for the implementation of the ECC would create a better understanding of the expectations required for students and teachers to support this explicit learning. More time through smaller caseloads is also required to assist with the implementation of the ECC by specialist staff (Lohmeier, Blankenship & Hatlen, 2009; Opie, 2018a).

Embrace assistive technologies

Given that a disability is defined by the interaction of a person and their environment (WHO, 2018), technology in classrooms today has the potential to decrease the impact of their disability for students with vision impairment (Opie, 2018b). According to Jones, Rudinger, Williams, & Witcher (2018) "assistive technology is one of the essential components for promoting inclusion of students with disability" (p. 29). For students who are blind or have a severe vision impairment, the addition of assistive technologies within mainstream classrooms has resulted in a reduction to traditional barriers of access to print (Akcil, 2018). Digital technology promises "more equitable access to education and social participation through the use of tools such as voice recognition, screen reading, voice recording, podcasts, e-books, speech-based interaction with mobile phones, digital pens for electronic note taking, optical character recognition, and digital braille devices" (Cain & Fanshawe, 2019a, p. 2). Digital technology can allow students access to online information, make connections through social media and communicate asynchronously with their peers, affording increased social participation (Jessup, et al., 2018). Using mainstream technologies with in-built accessibility functions, assists students to feel less different as their peers are using the same devices in the classroom and as such, more likely to utilise technology to access curriculum and content (Opie, 2018b).

Despite technological advancements, barriers still exist for students with vision impairment using technology due to a) a lack of knowledge about which product is the best for each application, b) a lack of student and teacher training on how to use devices, c) technology not being supported within the school, and d) the need to empower students to problem solve independently when the device does not work

(Jones et al. 2018). Continuing professional development to keep Advisory Teachers up to date on the latest equipment and inbuilt accessibility features of mainstream devices will ensure students are aware of the options available and develop skills to be independent in future employment and social participation.

CONCLUSIONS

A central tenet of inclusive education most relevant for students with vision impairments is the notion of "ensuring access to a broad and balanced curriculum which is equitable and provided for all children" (McLinden et al., 2017, p. 180). This chapter has demonstrated that vision impairment has academic, social, and physical impacts on student learning. Our research of 15 students in mainstream schools, their parents and teachers, showed that students with vision impairment want to be treated as a student first, that they are capable of engaging in the same learning as their peers, that social inclusion is important for their well-being, and that making learning accessible will help other students too. By listening to the students' voices and being willing to learn about and include advances in accessibility tools provided by mainstream technological devices, educators can better understand what accommodations will assist students to access the academic content of the classroom, whilst considering the important social aspects of acceptance and belonging.

FUTURE RESEARCH DIRECTIONS

Future directions for research in this area focus around providing up-to-date information, skills, and support for teachers in mainstream schools. Primarily, this should both privilege the voices of students with a vision impairment, their needs and preferences, as well as promote ways for teachers to connect with a range of sources to best support students' particular needs. Future research should also explore ways to assist teachers appreciate the necessity for individualised adjustments, and practical exemplars for how this plays out in practice. For example, Advisory Visiting Teachers can assist teachers to stay abreast of future technological advances and the types of accessibility options that provide students who are blind or have low vision full access to the curriculum and social participation within the school. Future research must also examine the continuum of support offered from Early Childhood contexts through to Higher Education so that a seamless transition through these levels can be made.

STIMULATING REFLECTIVE DIALOGUE

1. Put some sunglasses on to replicate a small vision loss. A scratched pair would be even better! Walk through your school, classroom, eating area and playground. What do you notice? What implications could this have for staff, parents or visitors to your school? If you have a student with vision impairment in your classroom, you may want to order vision simulation glasses, representing your student's vision loss, from Vision Australia and try these out with the whole class. https://www.visionaustralia.org/free-simulation-glasses

2. Have a look at VoiceOver on your iPhone or iPad. You may like to start with this tutorial from Apple Support: https://www.youtube.com/watch?v=qDm7GiKra28.

3. Read more on the principles and practices for students who are blind or have low vision suggested by the South Pacific Educators of Vision Impairment: http://www.spevi.net/wp-content/uploads/2016/08/SPEVI-Principles-and-Practice-2nd-Ed-HighRes.pdf

REFERENCES

Australian Bureau of Statistics (ABS). (2011). *4221.0 – Schools, Australia, 2011*. Retrieved from: http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4221.0main+features502011

Akcil, U. (2018). The use of mobile learning for visually impaired learners' school in tolerance education contents. *Quality and Quantity, 52*, 969-982.

Anthony, T. (2014). Family support and early intervention services for the youngest children with visual impairments. *Journal of Visual Impairment & Blindness, 108*(6), 514-519.

Australian Government Attorney General's Department (2005). *Disability Standards for Education.*

Australian Government. (1992). *Disability Discrimination Act 1992*.

Australian Institute for Teaching and School Leadership [AITSL]. (2014). *The Australian Professional Standards for Teachers*. Retrieved from https://www.aitsl.edu.au/

Beardslee, W., Watson Avery, M., Ayoub, C., Watts., Lester, P. (2010). *Building resilience: The power to cope with adversity*. Retrieved from https://vawnet.org/material/building-resilience-power-cope-adversity
Bennett, G.A., Newman, E., Kay-Lambkin, F., Hazel, G. (2016). *Start well: A research project supporting resilience and wellbeing in early career teachers–summary report*. Newcastle, NSW:

Everymind. Retrieved from: http://s3-ap-southeast-2.amazonaws.com/everymind/assets/Uploads/Summary-Report_rebranded.pdf

Bishop, D., & Rhind, D. J. A. (2011). Barriers and enablers for visually impaired students at a UK Higher Education Institution. *British Journal of Visual Impairment, 29*(3), 177-195.

Boyle, C., Topping, K., & Jindal-Snape, D. (2013). Teachers' attitudes towards inclusion in high schools. *Teachers and Teaching, 19*(5), 527-542.

Brambring, M. (2007). Divergent development of verbal skills in children who are blind or sighted. *Journal of Visual Impairment & Blindness, 101*(12), 749-762.

Brown, L., Brown, S., & Glaser, S. (2013). Improved transition outcomes for students with visual impairments through interagency collaboration. *Journal of Visual Impairment & Blindness (Online), 107*(6), 406-408.

Brown, C. M., Packer, T. L., & Passmore, A. (2013). Adequacy of the regular early education classroom environment for students with visual impairment. *The Journal of Special Education, 46*(4), 223-232. doi:10.1177/0022466910397374

Cain, M., & Fanshawe, M. (2019a), "Talk to Me!": Empowering students with a vision impairment through audio e-assessment feedback". In C. Dann, & S. O'Neill, (Eds.). *Technology-Enhanced Formative Assessment Practices in Higher Education*; pp. 1-19. IGI global doi:10.4018/978-1-7998-0426-0

Cain, M., & Fanshawe, M. (2019b). Opening eyes to vision impairment: Inclusion is just another way of seeing. In S. Carter (Ed.). *Opening Eyes onto Inclusion and Diversity [Open Book]* from https://usq.pressbooks.pub/openingeyes/.

Cheryan, S., Ziegler, S. A., Plaut, V. C., & Meltzoff, A. N. (2014). Designing classrooms to maximize student achievement. *Policy Insights from the Behavioral and Brain Sciences, 1*(1), 4-12. https://doi.org/10.1177/2372732214548677

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education* (5th. ed.). London: Routledge Falmer.

Creswell, J. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Frenchs Forest, NSW: Pearson.

DeCarlo, D., McGwin, G., Bixler. M., Wallander, J., Owsley, C. (2012). Impact of paediatric vision impairment on daily life: Results of focus groups. *Optometry and vision science: official publication of the American Academy of Optometry*, *89*(9), 1409-1416.

Deloitte Access Economics (2016). *Socioeconomic impact of low vision and blindness from paediatric eye disease in Australia*. Retrieved from https://www2.deloitte.com/au/en/pages/economics/articles/socioeconomic-impact-low-vision-blindness-paediatric-eye-disease-australia.html

Ekberg, T., Rosander, K., von Hofsten, C., Olsson, U., Soska, K., & Adolph, K. (2013). Dynamic reaching in infants during binocular and monocular viewing. *Experimental Brain Research 229*(1), 1-12.

Feltoe, G., Beamish, W., & Davies, M. (2016). Secondary school teacher stress and coping: Insights from Queensland, Australia. *International Journal of Arts & Sciences, 9*(2), 597-608.

Ferrell, K. (2011). *Reach out and teach: Helping your child who is visually impaired to learn and grow.* New York, NY: AFB Press.
Foreman, P., & Arthur-Kelly, M. (Eds.). (2014). *Inclusion in action* (4th. ed.). South Melbourne, Vic: Cengage Learning.

Forlin, C., & Chambers, D. (2011). Teacher preparation for inclusive education: Increasing knowledge but raising concerns. *Asia-Pacific Journal of Teacher Education, 39*(1), 17-32.

Forlin, C., Keen, M., & Barrett, E. (2008). The concerns of mainstream teachers: Coping with inclusivity in an Australian context. *International Journal of Disability, Development and Education, 55*(3), 251-264.

George, A., & Duquette, C., (2006). The psychosocial experience of a student with low vision. *Journal of Visual Impairment & Blindness, 100*(3), 152-163.

Gilbert, C., Foster, A. (2001) Childhood blindness in the context of VISION 2020–the right to sight. *Bulletin of the World Health Organization (79)*3. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/11285667

Hatlen, P. (1996). The core curriculum for blind and visually impaired students, including those with additional disabilities. *Re;View, 28*(1)*, 25-32.

Holbrook, M. C., & Koenig, A. (2000). Basic techniques for modifying instruction. In M. C. Holbrook & A. Koenig (Eds.), *Foundations of education: Instructional strategies for teaching children and youths with vision impairment 2*, (pp. 173-193). New York NY: AFB Press.

Hollier, S., McGrath, A., Scott, K., Varley, A., & Woodford, A. (2013). *Vision Education Scoping Report,* Media Access Australia, Retrieved from: http://www.mediaaccess.org.au/sites/default/files/files/MAA%20Vision%20Education%20Scoping%20Report%20Final%20Version.pdf

Hollins, M., (1989). *Understanding blindness: An integrative approach*. Hillsdale. NJ: Lawrence Erlbaum Association.

Hoskin, J., Boyle, C. & Anderson, J. (2015). Inclusive education in pre-schools: predictors of pre-service teacher attitudes in Australia. *Teachers and Teaching, 21*(8), 974-989. doi: 10.1080/13540602.2015.1005867.

Ihrig, C. (2013). Clinical pearls. *Optometry & Vision Science, 90*(3), 302-303.

Iverson, J., & Goldin-Meadow, S. (1997). What's communication got to do with it? Gesture in children blind from birth. *Developmental Psychology, 33*(3), 453-467.

Janus, M. (2011). Impact of impairment on children with special needs at school entry: Comparison of school readiness outcomes in Canada, Australia, and Mexico. *Exceptionality Education International, 21*(2), 29-44.

Jessup, G., Bundy, A. C., Broom, A., & Hancock, N. (2017). The social experiences of high school students with visual impairments. *Journal of Visual Impairment & Blindness, 111*(1), 5-19.

Jessup, G., Bundy, A. C., Hancock, N., & Broom, A. (2018). Being noticed for the way you are: Social inclusion and high school students with vision impairment. *British Journal of Visual Impairment, 36*(1), 90-103. doi:10.1177/0264619616686396
Jones, B. A., Rudinger, B., Williams, N., & Witcher, S. (2018). Training pre-service general educators in assistive technology competencies for students with visual impairments. *British Journal of Visual Impairment, 37*(1), 29-39. doi:10.1177/0264619618814066

Kamei-Hannen, C., Howe, J., Herrera, R., & Erin, J. (2012). Perceptions of teachers of students with visual impairments regarding assistive technology: A follow up study to a university course. *Journal of Visual Impairment and Blindness, 106*(10), 666-678. doi:10.1177/0145482X1210601011.

Kelly, S., & Wolffe, K. (2012). Internet use by transition-aged youths with visual impairments in the united states: Assessing the impact of postsecondary predictors (CEU Article). *Journal of Visual Impairment & Blindness,106*(10), 597-608.

Levin, D., & Rotheram-Fuller, E. (2011). Evaluating the empowered curriculum for adolescents with visual impairments. *Journal of Visual Impairment & Blindness, 105*(6), 350-360.

Lieberman, L., Haegele, J., Columna, L. & Conroy, P. (2014). How students with visual impairments can learn components of the expanded core curriculum through physical education. *Journal of Visual Impairment and Blindness, 108*(3), 239-251.

Lohmeier, K, L., (2009). Aligning state standards and the Expanded Core Curriculum: Balancing the impact of the No Child Left Behind Act. *Journal of Visual Impairment and Blindness 103*(1)*,* 44-47.

Lohmeier, K., Blankenship, K., & Hatlen, P. (2009). Expanded core curriculum: 12 years later. *Journal of Visual Impairment & Blindness,103*(2), 103-112.

Lueck, A., Erin, J., Corn, A., & Sacks, S. (2010). *Facilitating visual efficiency and access to learning in students with low vision. A Position Paper of the Division on Visual Impairments*. Retrieved from: https://www.cec.sped.org/publications

McDonnall, M. C. (2011). Predictors of employment for youths with visual impairments: Findings from the second national longitudinal transition study. *Journal of Visual Impairment & Blindness, 105*(8), 453-466. doi:10.1177/0145482X1110500802

McLinden, M., Ravenscroft, J., Douglas, G., Hewett, R., & Cobb, R. (2017). The significance of specialist teachers of learners with visual impairments as agents of change: Examining personnel preparation in the United Kingdom through a bioecological systems theory. *Journal of Visual Impairment & Blindness, 111*(6), 569-584. doi:10.1177/0145482X1711100607

Moon, J., Lee, M., & Moon, N. (2014). Association between video display terminal use and dry eye disease in school children. *Journal of paediatric ophthalmology and strabismus 51*(2), 87-92.

Morris, C. & Sharma, U. (2011). Facilitating the inclusion of children with vision impairment: Perspectives of itinerant support teachers. *Australasian Journal of Special Education*, *35*(2), 191-203. doi:10.1375/ajse.35.2.191

Opie, J. (2018a). Educating students with vision impairment today: Consideration of the expanded core curriculum. *The British Journal of Visual Impairment, 36*(1), 75-89.

Opie, J. (2018b). Technology today: Inclusive or exclusionary for students with vision impairment? *International Journal of Disability, Development & Education, 65*(6), 649-663. doi:10.1080/1034912X.2018.1433294

Peterson, C., Peterson, J., & Webb, J. (2000). Factors influencing the development of a theory of mind in blind children. *British Journal of Developmental Psychology*, *18*(3), 431–447.

Rosenblum, L. P. (2006). Developing friendships and positive social relationships. In S. Z. Sacks & K. E. Wolffe (Eds.), *Teaching social skills to students with visual impairments: From theory to practice* (pp. 163-194). New York, NY: AFB Press.

Rosenfield M., (2016). Computer vision syndrome (a.k.a. digital eye strain). *Optometry in Practice 17*(1), 1-10.

Royal Institute for Deaf and Blind Children [RIDBC]. (2014). *The Australian Childhood Vision Impairment Register newsletter for March 2014*. Retrieved from: https://www.ridbc.org.au/renwick/acvir-newsletters

Round, P. N., Subban, P. K., & Sharma, U. (2016). 'I don't have time to be this busy'. Exploring the concerns of secondary school teachers towards inclusive education. *International Journal of Inclusive Education, 20*(2)*,* 185-198. doi: 10.1080/13603116.2015.1079271

Rule, A.; Stefanich, G.; Boody, R. Peiffer, B. (2011). Impact of adaptive materials on teachers and their students with visual impairments in secondary science and mathematics classes. *International Journal of Science Education, 33*(6), 865-887.

Sheppard, A., Wolffsohn, J. (2018). Digital eye strain: prevalence, measurement and amelioration. *British Medical Journal Open Ophthalmology, 3*(1), 1-10.

Sokolowski, R. (2000). *An introduction to phenomenology.* Cambridge, UK: Cambridge University Press.

South Pacific Educators in Vision Impairment. [SPEVI]. (2004). *Principles and standards for the education of children and youth with vision impairments, including those with multiple disabilities*. Retrieved from https://www.spevi.net/spevi-principles-and-practice/

Stuart, M., Lieberman, L., & Hand, K. (2006). Beliefs about physical activity among children who are visually impaired and their parents. *Journal of Visual Impairment & Blindness*, *100*(4), 223-234.

Telec, F., Boyd, A. & King, J. (1997). *Vision impairment: A reference manual*. Sydney: NSW Department of School Education, Special Education Directorate.

Thurston, A., (2014). The potential impact of undiagnosed vision impairment on reading development in the early years of school. *International Journal of Disability, Development and Education, 61*(2), 152-164. doi:10.1080/1034912X.2014.905060

Victorian Government. (2019, August, 09). *Glasses for kids.* Retrieved from: https://www.education.vic.gov.au/about/programs/Pages/glassesforkids.aspx

Vision Council, the (2016). *Eyes overexposed: The digital device dilemma: digital eye strain report.* Retrieved from: https://www.thevisioncouncil.org/content/digital-eye-strain

Whitburn, B. (2014). 'A really good teaching strategy': Secondary students with vision impairment voice their experiences of inclusive teacher pedagogy. *British Journal of Visual Impairment, 32*(2), 148-156. doi:10.0077/0264619614523279

Wolffe, K., & Kelly, S. M. (2016). Beyond reading & writing: Technology, social and living skills of a select group of academically capable blind students in the U.S. *The Educator, 29*(2),18-30.

Wolffe, K. M., & Kelly, S. (2011). Instruction in areas of the expanded core curriculum linked to transition outcomes for students with visual impairments. *Journal of Visual Impairment and Blindness, 105*(6), 340-349.

World Health Organization [WHO], (2018). *Blindness and vision impairment [Factsheet]*. Retrieved from http://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment

World Intellectual Property Organisation (2013). Marrakesh treaty to facilitate access to published works for persons who are blind, visually impaired, or otherwise print disabled. Retrieved from: http://www.wipo.int/treaties/en/ip/marrakesh/summary_marrakesh.html

Zebehazy K. T., & Smith T. J. (2011). An Examination of Characteristics Related to the Social Skills of Youth with Visual Impairments. *Journal of Visual Impairment and Blindness. 105*(2)*, 84-95.*