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The language of newsletter is English, but you can use Google translator service to obtain on-line translation on http://www.icevi-europe.org/newsletter/issue74.php

The President's Message

Dear Members and Non-Members of ICEVI-Europe,

The COVID-19 pandemic has had a great influence on the lives of all of us. It not only threatens the health and wellbeing of many individuals, but it is has also brought changes to our society as a whole. Social distancing measures are having an impact on all our lives, and people with disabilities and the elderly are particularly at risk of isolation.

The pandemic makes it inevitable that many will lose their jobs and thus their income. Many charities and project managers are now trying to obtain additional funding to help meet even people's basic needs.

The pandemic has brought us other things, too. Initiatives are emerging everywhere to help one another and to support the elderly, the unwell and people with disabilities. The Internet is heavily burdened by many conference calls, webinars and meetings seeking to improve things and fortunately there is also a raised awareness about the need to review our lifestyles, both nationally and internationally.

In short, COVID-19 has set a lot of new things in motion and has encouraged us to reflect carefully.

I myself have been struck by information I recently received from ICEVI-World about people with multi disabilities and deafblindness.

ICEVI has launched "Include Me", an open source publication for families, caregivers, community workers, educators, and friends who support and encourage children with multiple disabilities and vision impairment (MDVI) or deafblindness (DB) to participate in home, community and educational activities. Written from the perspective of a child with MDVI or deafblindness, "Include Me" helps us all to hear the voice of a child who, like all children, is "waiting and wanting to be loved, respected, and included."

"Include Me" has been created in English and 17 other languages, and all versions are available for download and printing (A4 size paper, landscape page layout) on the ICEVI website - http://icevi.org/include-me-mdvi-deafblindness-publication/.

For me it has raised the question of whether ICEVI-Europe pays sufficient attention to the support given to these people at conferences and in its publications.

Covid-19 continues to affect our lives and it will do for a long time.

It would be interesting if we could inform one another in an upcoming newsletter about the effects that the pandemic is having on the education and rehabilitation of people with visual impairments, both for good and bad.

Don't hesitate to submit an article about your experiences. We can learn from each other.

We hope that you and your loved ones are staying healthy and safe during these difficult times. Through these unprecedented times, our main priority remains supporting persons with vision impairment to achieve their right to participate as full members of society with equal access to education, services, facilities and social and cultural life.

May we take this opportunity to kindly remind our valued Individual and Organization Members to pay their annual membership contribution. Membership fees are ICEVI Europe's main income and they enable us to continue to promote international cooperation in broadening the knowledge and skills of professionals working in the education and rehabilitation of persons with visual impairment.

Although you may have not yet have enjoyed a holiday, I hope you have had some time to relax. Let's hope we all get off to an energetic start after the holiday season and good health to you all.

On behalf of the Board of ICEVI-Europe,

**Hans Welling
President**

Accessible Graphs for Visually Impaired and Blind Users

We live in a visual world where data and content are often presented using graphical interfaces. In many cases this visual content can be made accessible to blind people using screen reader software and Braille displays. But despite the tremendous advances in the accessibility of websites, mobile apps, computer software and digital documents, one area still remains difficult to explore. Access to quantitative data shown through graphs and charts remains inaccessible to many people with visual impairment and blindness.

Most graphs are presented as images where all the data resides in the graph itself. Although alternate text can be added to graph images, in most cases the information provided in the text does not provide a full impression of the graph. It can be difficult to understand the various trends reflected in the graph such as average, minimum value, maximum and other details that can be accessed quickly through vision.

The Accessible Graphs Project aims to remove this barrier by developing a dedicated system designed for people with visual impairment and blindness, that will also help people who have difficulties perceiving or understanding the visual data contained in graphs and charts. The system helps the user by providing a simpler way to view graphs while maintaining accessibility for screen reader users.

- **Experiencing the accessible graph**

The graph is made accessible by a simple user interface that uses speech, tones and touch:

- Speech: Using Windows, Mac or Linux's built-in Text To Speech voices or screen reader software such as NVDA and JAWS

- Tones: using spatial sound that reflects the numerical data values

- Touch: using a Braille display

- **How the system works**

An end user with a visual impairment or blindness can access a given accessible graph and navigate it using screen reader software and/or a Braille display. At any given moment, a user can get more information about the graph such as minimum, maximum, average values and more. In addition, while the user is navigating the graph, the system produces a spatial sound that helps the user understand the trends of change in the graph – that is, an increase or decrease in the numerical value.

For example, a blind user can access a collection of 14,000 different stocks from all over the world, as well as currency exchanges, indexes and bitcoin prices, and review trends of change and fluctuations in a graph form. Anyone can experience the accessible stock graphs in the accessible stock web page. Just choose one of the technology companies and browse the accessible stock graph page.

- **Navigating the graph with a braille display**

- The left side of the braille display (cells 1 to 29) displays an overview of the graph. This part is static.

- The 30th cell is a separator between the left and the right sides

- The right side (cells 31 to 40) displays the data element under the cursor in the left side more accurately. You can think of the right side as an area where the data element under the cursor is displayed under a greater magnification level.

When using a Braille display, the user can navigate the graph using the navigation keys on the Braille display or keyboard shortcuts used by screen readers. Each time the numeric value under the cursor changes, the tactile output will lengthen or shorten in a way that illustrates to the user the height of the number relative to the other numbers in the value range of the graph. More detailed explanation can be found on the Accessible Graphs website on the Braille tutorial page. Here we'll just give you a very small sample of the interesting things a Braille display can draw: ⠈⠡⠒⠢⠄⠠⠄⠠⠡⠒⠢⠄⠠⠄⠠⠊⠄

- **Our Vision**

Our system for making graphs accessible provides a solution to many of the accessibility barriers faced by people with visual impairments and blindness as students, as employees and as people seeking to be exposed to information displayed in graphs across the internet. One of the most important benefits of the system is that it enables the smoother integration of people with blindness into workplaces where there is a need to collect and analyze graph information, such as financial, business, analysis, science and computer algorithms related jobs.

This project is funded by the Israel Innovation Authority, and is run by The Public Knowledge Workshop (a nonprofit organisation).

- **The Team**

- Ofer Bartal, Software Engineer, X-Googler, Co-founder at wakka.ai with a goal to help people learn and work in software.

- Mohammad Suliman, Software developer, B.Sc in Computer Science from Technion, blind and wants to help other blind people in STEM education.

- Eilana Benish, legally blind, Product Manager and Website Accessibility Expert.

Providing Free and Accessible Education for Kids with Low Vision

Inspiration

I always thought that everyone who was blind was completely blind, and that all of them depended on braille characters to read. It wasn't until I went to volunteer at the Bangkok School of the Blind that I became aware of my misconception. At the school I got a chance to speak with the Manager of Integrated Learning, a volunteer called Mrs. Suchitra Tigwattanon. She showed me tactile books created by other volunteers, which truly fascinated me. There were all sorts of tactile books, but I remember her saying that several low vision kids complained that volunteers would only make braille books, not books targeted at children with low vision. It seemed unfair for those low vision kids. If some of them can see pictures and read the alphabet, why should we let them continue to access only braille books? Why should we limit the opportunities of these low vision kids to use their vision? That was when I realized I had to do something.

Design / Feedback / Local Distribution

After interviewing a couple of low vision kids and doing extensive research, I decided to create a low vision book about four systems of the human body. My goal was to help the kids understand more about the human body through this book. The design of this book was inspired by a huge anatomy book that I had lying around the house, but I had to adapt it so that it would best fit the needs of low vision kids. To begin with I eliminated a lot of the small details and tried to create a high contrast ratio between colors while still maintaining the accurate color of each organ. Working on the text was also quite challenging. With the limited space I had, I wanted the content to be concise and easily understood. It took me many drafts and countless trials before I came up with the final design of the book, but it was totally worth it. After the customized book was printed and distributed in my own region, I received wonderful feedback from the community. The kids said that they were glad to see pictures of the human body that they would never have been able to access without such a resource. Some of them even said that this book made learning more fun and engaging. As of now, I will be distributing physical copies to 7 schools in Thailand which have an integrated learning program.

Global Distribution

Being an advocate for equality and inclusivity, I came up with the idea of distributing my book globally so that it would reach a wider and more diverse group of audiences. Since I wanted my book to reach as many low vision students as possible, regardless of their socioeconomic status and nationality, I decided to make my book free and accessible. I began the process of translating my book into English and contacting organizations and schools involved in helping kids with low vision all around the globe to see if they wanted to receive a digital copy or to help distribute. The amount of interest and help I got from countries and organizations was absolutely beyond my expectations. I must say that I am truly thankful that I was able to be a small part of this enormous community of people working together to help low vision kids.

If you are interested in receiving a copy, please contact me directly at beambeammyy@gmail.com   Thank you!

EDA PLAY: Fun and vision development for children with CVI

By **Markéta Skalická**, low vision therapist and **Ivana Bajgarová**, app development coordinator, EDA, Czech Republic

EDA cz, z. ú., is a non-profit organization in the Czech Republic, dedicated to early intervention and skills development for children with cerebral visual impairment (CVI). The EDA team´s methodologists for visual perception development create applications for iPads and Android tablets, and associated worksheets for children with visual disorders. Parents and teaching assistants can download simple accessible images at www.edaplay.com for free.

Using the accompanying worksheets, parents and assistants can help children create their own basic visual images. The tasks are simple and the child can easily access the main topic of each worksheet. The pictures are easy to understand but parent or assistants can supplement the content of the worksheet with their own input. For example, in worksheets containing a car, they can add their own sounds and commentary.
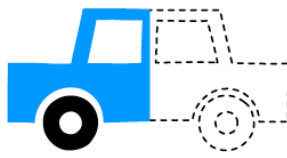
To see, children rely not only on their eyes but also on the visual pathways that take information to the centres in the brain that process visual information. In children with CVI, the task of processing unfamiliar visual information becomes more complicated. The child needs to see the object repeatedly and may need multisensory input to make sense of the image. A parent or assistant can more easily describe the image, when its characteristic shape, colour, and key details are provided in a worksheet. Repeated exposure to the image, combined with various types of practical activity such as colouring with a crayon, drawing a shape, cutting, joining identical images with a line, helps facilitate the storage of the image in the memory and it becomes gradually easier to process new images.

Because it is very difficult for children with a complex disability to maintain visual attention, a parent or assistant can easily add new worksheets to our tablet games, such as the free EDA PLAY TOBY app. Once you have completed several tasks in the game, the tablet can change the game to involve a new theme. The image which the child recognized in the application, can be re-introduced to a printed worksheet, but in a different scene, so we can repeat a motif that the child already recognises but present it within a different situation.

Popular topics include transport. You will find the tractors and cars both in the application and in the worksheets.
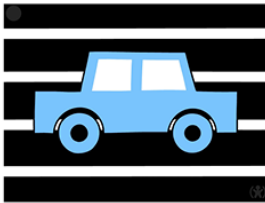
The range of EDA PLAY applications, which help to develop visual skills and fine motor skills in children with disabilities, will be expanded this year by the addition of a new game called EDA PLAY TOM. The game will be free. If you have any questions about worksheets or the EDA PLAY application menu, please email us at info@edaplay.com.

Conversations about CVI & 4Sight COVID 19

Conversations about CVI

Professor John Ravenscroft from the Scottish Sensory Centre, University of Edinburgh has been in conversation with leading researchers, academics, teachers and parents about childhood cerebral visual impairment.

These "Conversations about CVI" discuss the nature of cerebral visual impairment, assessments, cerebral visual impairment and autism, neuroplasticity, and current and future research. These conversations can be seen either on Prof Ravenscroft's academic link at "RavenscroftReviews"

https://media.ed.ac.uk/channel/Ravenscroft%20Reviews/160793481

Or on his YouTube channel

https://www.youtube.com/channel/UCMyYdNTKCiFxV8Etgahgv4Q?view_as=subscriber.

They can be distributed widely.

4Sight COVID 19

4Sight is a collaboration between the Scottish Sensory Centre, RNIB, The Welsh Association of Vision Impairment Educators, VIEW (the National professional association for QTVI's) The University of Birmingham's VICTAR (Visual Impairment Centre for Teaching and Research) and

the University College London, Habilitation and Disabilities of Sight Programme Director to deliver a series (4) of online learning presentations for professionals to consider a variety of creative strategies to support VI educators in returning to work in a COVID-19 environment. The first of these recordings and resources can be found https://sway.office.com/upkrRfSHxYlqOQC9. To get further links to additional presentations please email the Scottish Sensory Centre SSC EMAIL Sensory Centre sscmail@ed.ac.uk

A Symposium : The NeuroPedagogy of Vision : from Perception to Cognition

When: 20th May, 2021

Where: Lausanne (Switzerland)

Synopsis: How to relate neuroscientific discoveries and pedagogical applications? The symposium answers this question by coordinating pairs of lectures by neuroscientists and pedagogues. Adopting a pragmatic perspective, the symposium will tackle new discoveries in literacy, numeracy, cognition, perception, and sensory-motor coordination. The symposium will host a Young Investigator Award for the best three PhD students in cognitive neuroscience, developmental psychology, human vision neuroscience, pedagogy, neuropsychology, and any related discipline.

Mathematics for the blind using an accessible coding system

Mircea Bucur, Marian Padure

Introduction

In the context of the SarS-CoV-2 pandemic, between May and July 2020, the Fundatia Cartea Calatoare (The Travelling Book Foundation) from the city of Focsani in Romania has been implementing a project called "*Distance Learning Math Classes for the Blind*". In the lockdown that followed the pandemic, all public and special schools in Romania were closed and all academic activities were transferred in short time to an online environment, in order to avoid major system difficulties.

In this new pandemic context, many of our blind students had no access to materials in Braille or to subject support from a special education teacher. Some of the students, especially those in the upper grades, were preparing for the final exams which they needed to pass in order to be promoted to the next schooling cycle. The transfer of education to online learning has been a problem for many educational institutions and countries across the world, not just those in Romania.

The purpose and objectives of the project

The aim of the project was to find an alternative way for blind students to continue their studies by using distance learning courses via the Internet, supported by accessible and easy-to-follow materials.

The major objectives of the project were:

(a) to record DAISY audios of a collection of math books for students in Grade 4 (primary cycle) and Grade 8 (middle school), to help them prepare for the national assessment exam

and

(b) the development of a guide to using the mathematical code "Matematicus", accompanied by many practical examples of how it can be used to solve problems in homework.

The beneficiaries of the project were the blind students not just from the special schools but also those from the inclusive schools.

What is the Matematicus code?

From country to country there are different codes that are used to transcribe mathematical formulas into Braille. Recently, a standard braille code that unifies literary, mathematical and scientific braille codes into a single code (Unified English Braille) has been adopted by all English-speaking countries, and is a great step forward in education for the blind at the international level.

Because the Braille alphabet has only 64 different signs in total, encoding mathematics involves using groups of one or more Braille signs and various conventions for transcribing equations, powers, or other mathematical elements. For this reason, a single page of print that contains many mathematical formulas will occupy several pages in Braille. A 200-page print math course could require up to 10 volumes of braille.

Although conversion to Braille allows for the best and most accurate transcription of mathematical formulas, the large volume of Braille material and high production costs makes large scale production of mathematics materials prohibitively expensive.

It is of course possible to convert a page of formulas with the help of a human reader who will read the exercises just as the math teacher does orally. But the reader needs some understanding of mathematics to do this well.

Currently, the most expensive and powerful screen readers know how to read a transcribed formula in MATHML, but do not allow blind users to write a mathematical formula for themselves, because mathematical formula editors are graphical and screen readers do not interpret images.

Matematicus, developed by Mircea Bucur (a blind mathematician and computer scientist), is a simple language for writing mathematical formulas using a computer. It was created to facilitate the interaction between the blind and the sighted.

The great advantage that Matematicus offers is that in order to read a written document in this language, blind students do not need any other software to translate/read the mathematical

formulas in the document. They can do the decoding themselves by exploring the content of that document directly through Braille.

Another great advantage of Matematicus is that it is independent of the language known to the user, because it does not introduce keywords that are specific to a certain language. After just a quick study of the language use guide, a sighted person will easily decode the formulas contained in a document written in Matematicus.

The codes of the Matematicus language have been defined so that a sighted person can immediately work out what graphic sign that code refers to. At the same time, the prefixes that define Matematicus codes have been grouped according to the mathematical branch to which they refer. For example, the Matematicus codes used in set theory start with the @ character, those used in logic start with &, and those used in geometry start with $. Also, codes that begin with % define algebraic operations, those that begin defining logical relations, and those that begin with $ define geometric figures.

In a future we will present more information about Matematicus code, with accompanying examples and exercises.

Conclusions

The project has proved a real success among blind students, who passed the mathematics exams with grades above the national average. Due to the annual changes in the math textbooks, the Traveling Book Foundation aims to develop the project so that all math textbooks for the blind are translated into both DAISY and Matematicus formats.

The Babes-Bolyai University through the Office for Students with Disabilities was a partner in this project, developing tactile graphics materials for geometry exercises, producing multiple copies and making them available to all those interested: blind students, parents and teachers.

Adopting the Matematicus language as an alternative to MATHTML or LaTeX would further democratize the Internet, making it an accessible environment for all. E-learning platforms could provide courses in technical areas and for blind students, if they adopted the language of Mathematics as an alternative for teaching and solving homework.

Mircea BUCUR (office@fcc.ro) is a founding member and the president of The Travelling Book Foundation. He graduated the Faculty of Mathematics at the "Alexandru Ioan Cuza" University in Iasi. He succeeded in being the first blind computer programmer in Romania and in guiding other visually impaired people in the field of computer science. Mr. Bucur's main fields of interest are accessibility of technical information for blind and partially sighted, computer science, literature and music.

Marian PADURE (marian.padure@ubbcluj.ro) is a graduate in psychology and special education of the Babes-Bolyai University of Cluj-Napoca. He is a research assistant at the Special Education Department, coordinator of the Center for Counselling in Assistive Technologies for the Students with Visual Impaired and Responsible for the Office for Students with Disabilities of Babes-Bolyai University.

Characteristics of learning styles in people with visual impairments in using assistive technologies

By Marian Padure

Introduction and the framework

Explanations of the conditions that lead to learning and that optimize the act of learning are captured in learning theories, which have generated over time several different learning models. Learning theories, and their various psychological and pedagogical approaches, led to the development of a controversial and highly evoked field of study, that of learning and cognitive styles. The various psychological approaches left their mark upon learning theories, each theory relying on the concepts of the given approach. A wide range of theories have been developed including: classic association, behavioral and operant theories, pragmatic functionalist, cognitive, integral-hierarchy and holistic theories or constructivism theory.

The research in this study was focused on the identification of the characteristics of learning styles among students with visual impairment. The literature review included a radiography of the differences and relationships between learning and cognitive styles, two approaches that are often confused or used with the same meaning.

The first approach of this thesis focused on the particularities at the level of learning styles of visually impaired people. The second part of our research investigated the relationship between learning styles and the use of assistive technologies at all levels of the learning process.

The influences and the effects of assistive technologies for visually impaired people can be noted in the new educational and professional orientations, in communication management, information and study activities, at school, university, home or at work. The impact of introducing assistive technologies is high, and positive for enabling customized and optimized adaptations to the everyday learning styles of visually impaired pupils.

Assistive technologies offer the promise of access to information for this group of persons and have the potential to develop and support modern values, but for this to happen, society must adapt to and acknowledge the needs of visually impaired people. Multimedia systems based mainly on graphical complex elements must be designed to be accessible to blind people as well as to the sighted.

The methodology and research

The general objectives of the research were to identify the assistive technologies that best allow the development of learning mechanisms. The study was applied to a group of 141 participants with visual impairment (N=103 pupils, N=38 students), aged between 17 and 32, from special schools and universities in Romania.

The lack of specific instruments for people with visual disability, led the researcher to use various instruments, from various research fields of learning styles.

The Vermont Inventory Learning Styles allowed the researcher to find information about the features of the learning styles of visually impaired people from the perspective of (a) their information processing strategies, (b) their motivation for learning and (c) their learning using mental models.

The other instrument used in the research was *The Felder and Solomon Index of Learning Styles* that offered information regarding the way which the people with visual impairments (a) select information for learning, (b) determine the sensorial channel which facilitates information and the means of (c) processing information. *The Fleming and Mills Learning Styles Inventory* offered interesting information about the aspects of (a) perception and (b) processing of learning material.

To identify the relationship between learning styles and the use of assistive technologies, at all the learning process levels, the researcher presented a questionnaire that investigated the opinions of the visually impaired participants regarding the strategies they use in the process of learning when using assistive technologies. This instrument was correlate with PIADS scale (*The psychosocial impact of the assistive technologies*).

General conclusions

Assistive Technologies represent indispensable instruments for visual impaired students and facilitate a better education, social and vocational inclusion. Their frequent utilization in the learning process, in various situations, contexts, for sets of problems, exercises etc, improves learning to a considerable level, and, at the same time, they have a major impact, in a positive way, enabling a learning (and cognitive) style much more adapted to the individual requirements of the persons in relation to the educational and/or socio-professional environment.

Current utilization of assistive technologies in the learning process for visually impaired pupils, is a dimension of modern instruction, contributing to attaining positive results and learning performances, optimizing the individual cognitive and learning styles of pupils.

The research presents with statistical accuracy the learning particularities of the participants. Currently there are no dedicated tools specifically for blind students to evaluate their learning styles and preferences for learning. There is some work regarding the influences of universal design of learning, but most of the studies reviewed used a methodology of case studies, focused on children in in the primary and secondary classes. There are few studies in the literature that go towards defining learning styles in adulthood.

A main issue is still the accessibility of information in education. Digital evolution is the premise for us to develop effective instruction and safe education for students with disabilities. But we

must be careful with the aspects regarding accessibility of the environment and information. These are corelated, neither can exist without the other. The inaccessibility of a textbook, of an image, of a lesson, represents an impasse in the education of people with disabilities. The risk of waking up with uneducated people is high, because digitally we can provide information that is processed automatically, without being processed by the student's brain.

The entire abstract in English can be read at:
https://doctorat.ubbcluj.ro/sustinerea_publica/rezumate/2011/psihologie/Padure_Marian_En.pdf

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2021 International Orientation and Mobility Online Conference

My name is Chantelle Smith and I am a member of the International Orientation and Mobility Online Symposium (IOMOS) Planning Committee. I also work for the National Council for the Blind Ireland. I am reaching out to both share information about our upcoming conference.

The IOMOS started in 2018 and we are currently planning our fourth symposium, which will take place February 3-5, 2021. We are actively seeking Orientation and Mobility Specialists from around the world who are willing to present using an online platform about their experiences in the field working with babies, school-aged youth, working adults, and older adults. We hope this will also be an opportunity to connect with other Orientation and Mobility Specialists from other countries, broadening our reach and sharing resources. If you are interested in presenting, please complete the Call for Presenters Application at http://orientationandmobilitysymposium.com/ no later than September 14, 2020.

The IOMOS provides the opportunity for professional development credit through the Academy for the Certification of Vision Rehabilitation and Educational Professionals (ACVREP) for those who require it. We are excited to share that presenters and attendees have hailed from the following countries: Australia, Canada, China, Denmark, France, Greece, Ireland, New Zealand, Qatar, Slovakia, United Kingdom, United States.

If you would like more information about the Symposium or would like to apply to present, visit our website. If you would like to connect via social media, please send us your contact information for Facebook or Instagram. If you have additional questions, please email us at outreach@alliedindependenceonline.com and we will be happy to assist in any way we can. I appreciate your time and willingness to share this information with your network and hope you join us in 2021!

Useful online resources from VICTAR University of Birmingham

A selection of online resources currently freely available from VICTAR (Vision Impairment Centre for Teaching and Research) University of Birmingham UK.

- Early Childhood development and vision impairment training pack: Improving play and communications in home and early years settings. The ECD/VI Training Pack is intended to be used primarily by frontline health workers, specialist teachers and community development workers who support families with young children who have primarily a diagnosis of vision impairment.

- Improving access to work experiences for young people with a vision impairment. A resource to help local authorities supporting their students in undertaking work placements.

- Whole School SEND: Supporting students with vision impairment. This resource page has been developed to accompany the Whole School SEND introductory video to vision impairment.

- Online resources and guidance for young people with vision impairment going to university which draws upon our research evidence from the Longitudinal Transitions Study.

- Steps to Independence This online resource presents key issues and recommendations for those involved in teaching mobility and independence to vision impaired children. The content authors were Sue Pavey, Graeme Douglas, Mike McLinden, and Steve McCall of the Visual Impairment Centre for Teaching and Research (VICTAR) at the University of Birmingham. The DfES, The Guide Dogs for the Blind Association, OPSIS and RNIB jointly funded this research.

- Supporting visiting teaching services to best measure the outcomes of their work (working with Brent local authority)

- Thomas Pocklington funded guidelines on how to measure the effectiveness of services for people with sight loss (PDF). The report sets out some important information on outcome measures used when evaluating services for vision impaired people. The guide has been written for Professionals who want to evaluate the services they provide; Researchers who are evaluating services and interventions and Commissioners of research or services who are assessing the impact of their commissioned work

- Tough Talks. A guide for parents in talking to their child about their vision impairment. The resource draws upon evidence from the Longitudinal Transitions Study.

For further information about VICTAR visit
https://www.birmingham.ac.uk/research/victar/index.aspx