AUSTRALIAN ASSISTIVE TECHNOLOGY CONFERENCE 2018

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Clark D, Tilbrook A
‘The Perfect Storm’: Continuity of Access to Assistive Technology Supports During the NDIS Transition

Hegert T

Technology for all, Eureka Room 2, November 14, 2018, 1:00 PM - 2:20 PM

Aims

To ensure that continuity of access to Assistive Technology (AT) supports is provided to all people with a disability during the nationwide roll-out of the National Disability Insurance Scheme (NDIS).

Findings/Results/Outcomes

Acknowledging the need for service providers and funding bodies to be agile in their approaches towards systems and processes is the first step on the way to ensuring a future whereby the continuity of access to essential assistive technology supports is provided to all people with a disability.

As the roll-out of the NDIS continues across Australia, it is increasingly important that support continuity is provided to all people with a disability. This is particularly pertinent during the time that services are being transitioned from previous state-funded programs to the NDIS. This paper explores initiatives implemented by the State-wide Equipment Program (SWEP) in Victoria to support participants through the transition from State-funded equipment programs to the NDIS.

The NDIS reform is proving to be an enormous adjustment for funding bodies, assistive technology prescribers and suppliers, and NDIS participants alike. With the National Disability Insurance Agency (NDIA) estimating that by 2019, approximately 460,000 Australians under the age of 65 will transition into the NDIS, the demand relating to transitioning participants is enormous and will inevitably take some time.

As each roll-out region commences transition, the funding provisions to State-funded equipment programs is being reduced and the ability to be able to continue to support people with a disability in the same capacity is at risk of being compromised. In this time of change, the importance of the service providers and funding bodies’ ability to be agile in their approaches and in adapting systems to ensure support continuity is provided is becoming more evident. This paper will demonstrate current initiatives SWEP has used to ensure contemporary NDIS approaches.
Custom Assistive Technology can now be made more accessible and affordable to everyone thanks to 3D printing, enabling health professionals, AT providers and individual users to create custom or low volume parts quickly and affordably. The ability to create, share, modify and physically manifest objects can empower both AT providers and users.

This workshop aims to train participants on the basic skills and tools required to start creating and modifying 3D models of device parts as well as discussing some design considerations when modelling. Once a model is created the audience will also be shown how to share, replicate (or modify) and produce in small numbers for a fraction of the cost compared to traditional manufacturing processes.

This workshop will cover some of the following:

- How to model and produce affordable parts using 3D modelling and 3D printing.
- Advantages of 3D modelling designs, including ease of concept development, improved information sharing, collaborative development and improved documentation.
- Advantages and limitations of 3D printing.
- Considerations when designing and manufacturing custom medical devices.
- General engineering guiding principles to consider including application requirements for strengths/applied forces, surface finishes & tolerances).
- Where to find pre-made models (and optionally share your designs) to prevent “re-invention of the wheel”.
- How to make parts if you don’t own a 3D printer.
- See examples of real life devices made by the Rehabilitation Technology Unit, used by public patients in Western Australia.

We ask attendees to pre-register for a free account at onshape.org and bring their own laptop & mouse.
A Customizable Program to Design Ankle Foot Orthoses for Children with Over-Pronation

Loeskow T¹, Gudimetla P¹, Unsworth C¹

¹Central Queensland University

3D Printing, Imaging and Custom Design, Eureka Room 2, November 14, 2018, 11:00 AM - 12:00 PM

**Background:** Over-pronation in children is caused by ankle weakness, and results in lower leg roll. An Ankle Foot Orthosis (AFO) may be used to support a child to stand or walk. Existing AFOs are expensive and are often unsuitable for prolonged use due to inaccurate fit, cumbersome design and poor ventilation.

**Aim:** To develop a computer program to enable the custom design of a breathable AFO to suit a range of children’s foot dimensions.

**Methods:** The feet of a child with over-pronation were measured and a range of possible feet dimensions were established. A 3D parametrized model of an AFO was generated using Autodesk Inventor Professional. Two sizes of Footlogics® orthotic insoles were selected for use in the AFOs, and were scanned and imported into the 3D modelling environment. A combination of rules and forms were created to generate a program to customise the dimensions of the AFO to suit major specifications of the feet and ankle. Minor dimensions of the 3D model were programmed to support the change in nominated major parameters by using ratios or rules relevant for the behaviour of the area.

**Findings:** The program can rapidly generate customizable designs for AFOs compatible with available orthotic insoles. The files can be saved in several formats and taken for rapid manufacturing.

**Conclusion:** A program was created using Autodesk Inventor Professional that allows the user to generate a customized, breathable, 3D printable AFO for any child with over-pronation.
A Day in the Life of a Mainstream Inclusive iPad Classroom
Kirkman J¹
¹Potential Learning

Education & Skill Development, Eureka Room 1, November 15, 2018, 10:30 AM - 12:10 PM

In 2018 many classrooms have 1:1 technology and these devices have built in accessibility features which make applying Universal Design for Learning principles more feasible for mainstream teachers in mainstream schools. The type of resources chosen and the type of assessment tasks set can make a significant difference to how easily the curriculum can be accessed. While teachers may not always have the final say on every decision when it comes to planning and assessment, there are nonetheless ways to adapt and “change up” within one’s own practice.

This presentation will explore practices implemented by one teacher which attempted to accommodate a wide range of different learning needs. Despite a context which was less than supportive, students were equipped with a range of strategies and techniques which will enable them to learn independently and advocate for themselves in the future. This presentation may be useful for those who support school aged children and for those who would like to equip students or clients to use assistive technologies without a support person present.
In this paper we will use AAC dialogue to shoot out stories of the highs and lows of using technology to keep up with the speaking world. Meredith and Mel have known each other since we were in school. We are Australian AAC trailblazers: the first in Australia to use the Cannon™ communicators that shot out words on paper. The first to try out our batty “Beautiful Betty” Dectalk™ voices with our shiny new Lightwriters™, and we discovered how an electronic voice shaped the attitudes of those around us. We cried when the Australian voice “Karen” came into our lives - we finally had our own voice.

We screamed when technology failed us. We screamed louder when battery life decreased. The manufacturers told us we wanted more processes not longer battery life. Our screams were not heard. Our lives are ruled by battery life. We always have to carry a second communication strategy with us.

Most do not realise it is not as simple as putting a device in front of us and saying “communicate”- you need literacy, you need skills, you need patience on both sides.

We are two of the very few who have taken our electronic voices into the work force, where we have experienced frustration and triumph as we educated our colleagues and employers. Come on a journey with us through the last 30 years of assistive technology in Australia.
Access Methods – An Assessment Framework - Choosing The Most Efficient And Effective Method Of Controlling a Computer or Device.

Solomon S, Hughes E
Zyteq

Access Methods, Courtyard Room, November 15, 2018, 10:30 AM - 12:10 PM

Aims: Computer or device access relates to the way an individual ‘controls’ their device. This is the most important aspect when considering implementation of Electronic Assistive Technology (E.A.T). If an individual requires an alternative to using a mainstream mouse and keyboard then there are multiple alternate access methods now readily available. These include:

1. Direct touch on a screen
2. Adapted mouse options
3. Switch access
4. Head mouse
5. Gyroscopic mouse
6. Eye gaze
7. Voice

Outcome: It takes careful and individualised assessment and trial to establish the most efficient and effective alternate access method. We will outline what to consider in this process.

The Assessment Framework includes assessment of:

1. The person (physical, cognitive and social functional ability)
2. Their Electronic Assistive Technology (E.A.T) goals
3. Their environment
4. Support system
5. Potential future functional changes
6. What device they need/want to control related to wider goals

Different people with the same condition may use different access methods for the same device! This is appropriate as long as the access method is efficient and effective for the individual. Alternate Access to a computer or device may be enhanced through use of specialised software and/or hardware. There is no magic solution. The point is to find the best access method for an individual.
Adding value for customers under the NDIS

Gordon L1

1Department of Human Services (SA)

NDIS, Eureka Room 1, November 15, 2018, 1:30 PM - 2:30 PM

Introduction

Domiciliary Equipment Service (DES) is a business unit of the Department of Human Services in South Australia (SA), providing assistive technology (AT) to support people across the sectors of disability, ageing and health. Major programs supplied include the National Disability Insurance Scheme (NDIS), and SA’s jurisdictional AT programs. DES interacts with many customers on a daily basis, including end users, funders, service providers, client coordinators, assessors and suppliers.

Aims

With the significant changes occurring in the disability and aged care sector, DES undertook consultation with its customers to better understand their service needs.

Customers were analysed in three groups: end users and their carers; assessors requesting AT; and agencies employing assessors or providing other services to end users.

Consultation was undertaken using a multi-layered approach. In-depth interviews were held with key agencies, separate focus groups were held with end users and assessors, and an electronic survey was sent out to approximately 5000 end users and therapists.

Key areas investigated were each customer group’s expectations and preferences for AT services, ‘pain points’ in current processes, as well as information needs and communication preferences.

Findings/Results/Outcomes

With significant sector changes, including transitioning to the NDIS, this customer sounding is important for providers to grow and evolve to better meet the needs of their customers. The findings that will be discussed in the presentation are being applied to DES itself, but are also invaluable to the whole sector.
Advanced Imaging and Manufacture in Custom Assistive Devices

Slattery P\textsuperscript{1,2}, Mason O\textsuperscript{1}

\textsuperscript{1}Royal Brisbane And Women's Hospital, \textsuperscript{2}Queensland University of Technology

3D Printing, Imaging and Custom Design, Eureka Room 2, November 14, 2018, 11:00 AM - 12:00 PM

The rapidly evolving technologies of 3D image capture and advance manufacturing technologies such as 3D printing offer a wealth of potential opportunities in the field of assistive technology. Many of these techniques evolved in the manufacturing sector to produce fast and cost effective prototypes to help speed products to market. For many years these technologies were complex and expensive putting them out of reach of all but the largest of industries. Over the past decade these technologies have started to move into the consumer market meaning that it is feasible for even small, low volume industries to take advantage of them.

The custom assistive technology field is by definition an area that is all about prototypes. Each device is bespoke to a person’s individual needs. For this reason the Royal Brisbane and Women’s Hospital, Rehabilitation Engineering Centre in conjunction with students from the Queensland University of Technology have been investigating ways to use these technologies to provide specialised services for custom devices. This paper showcases the work so far.
An ad hoc multidisciplinary team service delivery model for custom and complex AT

Brown I
NCRE

AT Practice, Eureka Room 2, November 15, 2018, 10:30 AM - 12:10 PM

Aim: To present an ad hoc multidisciplinary team model of service delivery that provides individual and mono-disciplinary teams to form and disband to suit the emerging NDIS-driven market.

Outcome: In the emerging market there will be an increasing degree of scrutiny of AT scripting and provision. The distribution of funding into discrete and annual allocations increases the expectation that the outcomes sought will be met by competent and cost-effective providers with limited cycles of review and reconsideration. The ad hoc multidisciplinary team service delivery model allows primary providers to engage peers with relevant competencies to ensure that AT provision is achieved with efficiency, cost-effectiveness and integrity.

With the NDIS promoting a competitive provider market, there has been a surge in providers operating individually, or in mono-disciplinary teams. Recognising that AT prescription can be complex, there has been some leniency in prior funding arrangements with cycles of provision, review and reconsideration. The financial cost of this process was largely removed from the individual client. NDIS participants, however, have designated funds allocated in advance, and it is very apparent when the AT provision process does not go smoothly. Such an outcome is more likely when the provider operates outside of their areas of competency.

The NDIA is actively in discussion with ARPA, the ACCC and other consumer advocates to ensure that participants have some recourse when funds are wasted by providers who do not operate within the bounds of their competency. Moreover, providers operating outside the bounds of their competency are subject to Australian consumer law and are not covered by their professional indemnity, which is specified for the particular competencies of their profession.

As a result, there will be an increasing need for service providers to engage peers with relevant competencies to ensure that AT provision is achieved with efficiency, cost-effectiveness and integrity. A service delivery model where ad hoc multidisciplinary teams form and disband around individual episodes of care allows providers to leverage the competency of other providers on an as-needed basis. This model, its strengths and potential weaknesses will be discussed and examples provided of how it might operate in practice.
An Interactive and Therapeutic Gaming System to Encourage Bimanual Use - from Research to Market

Hobbs D¹, Walker S¹
¹Flinders University

AT Innovations, Courtyard Room, November 15, 2018, 1:30 PM - 2:30 PM

Cerebral palsy (CP) is the most common cause of childhood physical disability and affects more than 34,000 people in Australia. Most children with CP prefer to use their dominant, less-affected hand for upper limb activities, meaning limb non-use can be an issue. A common approach to engaging the non-dominant, more affected limb involves constraint of the dominant limb or encouraging bimanual upper limb activity.

The *OrbIT Gaming System* (OGS) is a haptic, accessible, and independently operable ‘serious gaming’ system that was designed to engage children with an upper limb impairment and sensory deficit due to CP. The OGS can only be used when both hands are actively engaged on the controller, meaning an integrated, forced-bimanual use paradigm is achieved. Thus, the OGS combines an engaging leisure activity (computer gaming) with therapy to motivate the child to continuously use both hands in a coupled bimanual activity. The technology has been successfully piloted with both children with CP and adults post-stroke, achieving statistically significant positive outcomes on both occasions.

This presentation will provide an overview of the research that led to the design and development of the OGS, and the process that led to the creation of a more commercial, user-centric version of the technology, called *i-boll*. A particular focus will be on university engagement with industry, and the process of translating a proof-of-concept prototype trial device into a commercially viable product, by specifically addressing device usability, accessibility, adaptability, durability and affordability.
Analysis of Stability, Maneuverability in Manual Wheelchairs - Calculation and application of the Centre of gravity of a wheelchair user

Contoyannis B¹, Campo Uribe J², Robinson D³, Vien K¹, Rowe A³

¹Melbourne Health, Specialist Wheelchair and Seating Clinic, ²University of Melbourne, Department of Biomedical Engineering

AT Practice, Eureka Room 2, November 15, 2018, 10:30 AM - 12:10 PM

The aim of this project was as follows:

To implement a way to determine the seated position of a wheelchair user, through the calculation of the centre of gravity (CoG), to assess, monitor, and potentially improve clinical practices and user outcomes at the SW&SC, at the RMH.

This presentation illustrates the development of a device and a methodology to examine wheelchair stability and maneuverability at the SW&SC. The concept phase’s first step is to analyse the applicability of existing solutions (to calculate the CoG) to the clinical setting at the RMH. Considering the proposed specifications, in addition to the opinions of the clinical staff and project supervisors, an initial general solution will be described.

Prototypes were developed and trialled in the clinical environment. The prototypes were validated and tested, and an error analysis was performed. Finally objective measures of the clients of the SW&SC were taken and the staff were questioned regarding how the measures can assist their clinical decision making.

Having developed a final device and applicable to the clinical setting, the device and on screen calculation method will be presented. Findings regarding the clinicians’ use and understanding will also be presented.

The goal of introducing a fully functional device to the SW&SC at the RMH, meeting all the device’s specifications, critical calculations and ability to gather valuable feedback from clinicians has been achieved in prototype form and will be presented.

It is considered that this prototype can be implemented into any service without either great expense or difficulty.
Assistive Technology and Home Automation - A Systems Engineering Perspective by an Assistive Technology User

Hunter A, Hockey S

ASSIST Therapy Services

Housing, Eureka Room 2, November 16, 2018, 10:30 AM - 12:10 PM

Aims

- Provide an insight into application of Systems Engineering techniques into designing AT for SDA,
- document the type of residential functions that need to be considered and outline alternatives in a (hopefully) not too technical manner, and
- primarily benefit AT Prescribers looking for an overview for Assistive Technology/ (Home Automation) to provide advice when dealing with disability or funding bodies.

Findings/Results/Outcomes

The presentation main outcomes are:

- outline alternatives and consideration for AT for SDA,
- lessons learnt in designing, building, and living in SDA home requiring extensive AT using System Engineering approaches, and
- raises questions to hopefully provoke discussion on future development of AT from a System Life-Cycle Engineering perspective.

Abstract

Use of appropriate Assistive Technologies can have a significant impact on the degree of independence a person with high physical support needs can achieve. This presentation will provide a description of the experiences of a Systems Engineer with C4 quadriplegia, who has designed, built, and is living in a home that maximises the opportunities provided by AT. The use of System Engineering design techniques will also be discussed in relation to the AT design process.

This presentation will benefit AT Prescribers interested in home automation; including considerations involved, possible alternatives, and the final decisions made in the case example. Importantly, outcomes will also be described to illustrate what worked, and how the new house with AT compared to the previous one. Finally, advice based on lessons learnt will be provided, and suggested questions AT prescribers should ask when considering home automation.
Assistive technology as a pre-requisite for choice: the importance of connectivity, before expecting goals and planning.

Tellefson C, Steele E

1 Abl Australia

NDIS, Eureka Room 1, November 15, 2018, 1:30 PM - 2:30 PM

Abstract: The NDIS aims to deliver choice and control to people with disability, by empowering them to make decisions regarding their supports, including assistive technology. This presentation argues that, at least for some participants, this puts the cart before the horse.

People with dual sensory loss require assistive technology solutions to establish and maintain a connection with the world. AT enables people with disability to live a better, more independent and more inclusive life. It enables people with disability to maximise their abilities at home, in the community and in the workplace, ensuring greater economic and social participation. It is impossible for an individual to anticipate or choose the specific elements of assistive technology solutions that will best suit them without prior opportunity to learn about the possibilities through experience.

This presentation will discuss an innovative, peer-led model of assistive technology service delivery that supports people to discover, explore, learn and develop the knowledge and skills necessary to become an assistive technology user. It is only through this investment in supporting people to become assistive technology users that they come to a position where they can make plans for the future and exercise choice and control in decisions regarding support.
Assistive Technology Curriculum in OT Courses – designing and shaping the future

Phuah T, Layton N, Lovell R, MacDonald R, Verdonck M, Callaway L

1Swinburne University, 2University of the Sunshine Coast, 3Monash University, 4Charles Sturt University

Panel Session, Courtyard Room, November 15, 2018, 3:00 PM - 4:00 PM

Health professionals - and the universities that design and deliver curriculum to produce practice-ready graduates - are operating in a rapidly changing policy and practice environment. Specific to the burgeoning area of assistive technologies (AT), it is necessary to be flexible and responsive educators to ensure contemporary training for health professional students. This responsive approach also needs to be considered in light of designing AT curriculum content that aligns with graduate competencies, course accreditation as well as resource limitations within the tertiary education sector.

A highlight of AATC 2016 was a panel of occupational therapy educators from a range of universities, describing the ways in which assistive technology is taught within occupational therapy curricula. This 2018 panel continues this conversation in light of recent developments including the rollout of the NDIS, GATE and the WHO AT resolution. Panellists will include occupational therapy educators from around the country, addressing a range of AT education topics including scope of technology, co-production of curricula, current teaching and learning strategies, and future visioning.

This panel discussion will be suitable for anyone interested in collaborating on, or currently involved in, the production of contemporary AT education methods and the support of graduate health professionals that operate with person-centred approaches to AT practice.
Assistive technology training: Identifying indicators for quality
Phuah T¹, Lord S
¹Charles Sturt University

AT Training (panel session), Eureka Room 3, November 14, 2018, 1:40 PM - 2:20 PM

This interactive workshop will invite participants to provide feedback and contribute to the development of a series of quality indicators for assistive technology training. There are a number of aims for the development and introduction of quality indicators. These include the ability to evaluate existing training content, provide standards for the development of training, and to provide course participants with reassurance that they are receiving training that meets quality criterion.

A range of proposed quality indicators will be presented. Workshop participants will be invited to discuss and comment on the suggested standards and contribute further ideas for quality indicators. Input will also be sought about potential ways to introduce quality standards and support recognition of assistive technology training and skills.
AT-Node: An Evidence-Based Database to Synthesize Text Entry Performance of Computer and Communication Interfaces

Arthanat S\textsuperscript{1}, Koester H\textsuperscript{2}
\textsuperscript{1}Dept Of Occupational Therapy, University Of New Hampshire, \textsuperscript{2}Koester Performance Research (KPR)

Communication, Eureka Room 1, November 16, 2018, 10:30 AM - 12:10 PM

Many individuals with disabilities use assistive technology (AT) control interfaces to enter text into computers and augmentative alternative communication devices. Selecting the right interface is a critical task that requires consideration of multiple factors including the individual’s text entry needs, diagnosis, motor and process skills, an appropriate body site and interface placement. Currently, there are limited evidence-based resources to support interface selection by AT service providers. This presentation will introduce and demonstrate an innovative database and registry that organizes all the relevant text entry data published in the last 30 years.

From the data compiled, we have analyzed comparative text entry rate (TER) in words per minute (WPM) of common interfaces and examined the influence of the client’s diagnosis and motor site on text entry. Automatic speech recognition, standard keyboard, cursor onscreen keyboard, and scanning onscreen keyboard had at least 4 studies and 30 subjects, with TERs averaging 15.4, 12.5, 4.2, and 1.7 wpm, respectively. Cerebral palsy was associated with significantly slower TER, at 5.5 wpm, than muscular dystrophy (12.5 wpm), spina bifida (10.4 wpm), SCI high cervical (10.1 wpm), and SCI low cervical (13.3 wpm). Among the 19 body sites represented, the Fingers bilateral category had the highest average, at 17.72 wpm. Head (2.92 wpm) and Hand (non-typing) (3.95 wpm) were each associated with significantly slower TER than Hands unspecified, Fingers bilateral, Hand with CE, Voice, and Mouth. We will also demonstrate ways in which researchers and practitioners can use the database to glean evidence. Future plans for crowdsourcing and updating the tool over time will also be discussed.
Capacity Building around Assistive Technology - A Co-designed peer support model to building capacity and support decision making.

Franciscus J, Loizou-lake D¹
¹Independent Living Centre WA

AT Design, Courtyard Room, November 14, 2018, 11:00 AM - 12:00 PM

Learning Objective:

- o-designing
- ow want information to be delivered to assist in choice and control

Danielle Loizou-Lake (AT Chat project) will explain how in an Australian first, a team of people with disability are changing the way information, advice and support is created and shared around Assistive Technology (AT) in a capacity building initiative by the Independent Living Centre WA called AT Chat, which is funded by the Disability Service Commission

Following its successful launch 2017, this innovative online AT Community hub delivers multimedia information connecting people living with disability to assist them to make choices around AT solutions. Danielle will share the co-design framework that this peer developed project undertook engaging an extensive with over 300 West Australians with disability. The outcomes of this allowed AT Chat to better understand the frustrations and barriers around accessing AT information and how people would like to see AT information communicated. Using this feedback AT Chat has been working to break down barriers and improve how people access information about AT (aids and equipment) using practical and engaging real life examples.

The AT Chat Facebook page (@atchatwithus) releases ‘user led’ video content based on what people wanted to know. Regular stories and information encourage other people with disability to see what is available for them to consider in a fun and contemporary style. This is supported by ‘Chatterbox’ a Facebook group to share knowledge and experience about AT and is supported by ILCWA health professionals
Choice and control: interpretive analysis of NDIS policy on assistive technology

Steel E

1University of Southern Queensland

AT Policy & Funding, Eureka Room 3, November 14, 2018, 11:00 AM - 12:00 PM

Choice and control: interpretive analysis of NDIS policy on assistive technology

The ambiguity of choice as a policy principle allows policymakers to avoid or delay specifying how it will be applied in practice, to gain popular support and pre-empt critique. Support is gained by arguing that market competition generates choice for individuals and efficiency for taxpayers, compared to the stereotypical view of bureaucratic and paternalistic public service provision. The Shut Out report illustrated a failure of mainstream and disability services in Australia to deliver equitable access to, and optimal outcomes from AT (National People with Disabilities and Carers Council, 2009). Choice has become a dominant yet imprecise vision to address these failures, but is taken for granted and unchallenged.

The findings from this interpretive research contrast with the political rhetoric of ‘choice and control’ and highlight the risks of devolved policy implementation perpetuating inequalities in access to support. Analysis of AT policy documents produced by the NDIA reveals an interpretation of choice driven by liberal ideals that are not necessarily complementary with the disability rights paradigm, and promotes practices that are inconsistent with the NDIS Act, 2013. Economic imperatives for cost-containment have been adopted as the primary criteria for assessing individual and collective AT procurement decisions, while the persistent problems with the AT workforce capacity and systemic issues of service quality remain unaddressed.
Complex mobility solutions for clients with neuromuscular degenerative disorders and high level spinal cord Injuries
Pasumarthy K\textsuperscript{1}, Malkin S\textsuperscript{1}
\textsuperscript{1}Rehabilitation Engineering Clinic
Neurological Conditions, Eureka Room 2, November 15, 2018, 3:00 PM - 4:00 PM

Speciality input devices such as chin operated joystick and head switches enable those with significant physical limitations to operate assistive devices such as power wheelchairs, augmentative communication devices and environmental controls.

The Rehabilitation Engineering Clinic (REC) has been a pioneer in designing, developing and adapting custom assistive and mobility products for over 35 years in WA. The clinic has prescribed and set up complex mobility solutions for over 100 clients with such diagnoses as high level spinal cord injuries, motor neuron disease, and multiple sclerosis. This session outlines clinical factors requiring consideration when setting up this complex technology and demonstrates some of the systems that the Rehabilitation Engineering Clinic has been instrumental in developing and customising.

Session will include

- Visual presentation overviewing assessment and service provision process of complex mobility solutions (including videos of equipment in use by clients and their feedback regarding changes to their quality of life as a result of the equipment)
- Demonstration of mobility solutions – motorised chin control, head joystick, switch driving options
- Overview of Bluetooth and infrared programming and operation via PWCs
- Three case study presentations outlining processes and challenges of individual custom device fitting and control mechanisms
- Additional custom made devices technology being utilised by REC (eg. Electric leg bag openers, Motorised iPad arm, custom cushion design, 3D printed joysticks, Center of Gravity platform).
To bring a Power-wheelchair assessment in a disease-oriented-concept! (The Participants of this workshop get an abstract of the most important dysfunctions of the disease. The same time I would like to show what are the possibilities in power-wheelchair-assessments in general. To bring this two topics together is the main benefit of this workshop)

The aim of the lecture is to give a rough overview of the disease ALS and to develop a useful e-wheelchair care based on the functional disorders. However, we also want to achieve a rethink in e-power-wheelchair assessment for ALS-affected persons. In the past, e-power-wheelchairs were mostly taken care of when there was almost total inability to walk. This not only has physical/functional effects, but also extremely strong psychological effects on those affected. This is also shown by a few studies carried out in recent years. The two most mentally debilitating events in their course of disease describe 90% of those affected with 2 situations:

1. The sudden wheelchair dependence
2. Be aware of the shortened life expectancy

Especially the fast progressive of the disease and the complex AT-Needs do not allows us mistakes and ignorance about ALS and the technological possibilities.

I would like to give a broad overview about the disease and the most important dysfunctions in relation to technical possibilities of a power-wheelchair-assessment.

- Power-Adjustments (especially stand-up-function)
- Special-controls
- Respirators
- Environmental-controls
Computer-related technology and environmental control: Challenges with the NDIS

Smith G¹
¹Ability Technology

NDIS, Eureka Room 1, November 15, 2018, 1:30 PM - 2:30 PM

The importance of computer-related assistive technology, including environmental control technology, has ballooned in recent years. However, it is also an area of rapid change, and it is difficult for policy-makers and funders to keep up with the pace of new developments while simultaneously balancing the requirement for good, evidence-based practice. How does the NDIS deal with this? How can practitioners and participants make the system work for them?

This paper will present the experiences of some practitioners and clients with regard to the NDIS as it seeks to deal with computer-related technology and environmental control. It will use these experiences to highlight issues in the NDIS that diminish the successful provision of assistive technology for NDIS clients:

- The poor design of the General AT Assessment template, which wastes time for practitioners who attempt to use it for this branch of AT.
- Ignorance of NDIA staff regarding this type of AT, suggesting a lack of training of NDIA staff.
- Confusion among some NDIA staff regarding the application of relevant legislative rules to this area of AT.
- An inadequate level of contact with AT specialists, who are usually available to field phone calls/emails where clarification may be sought.
- The poor quality of many participant plans, which often include AT but not the services required to implement them.
- Administrative delays, which means price/model changes inevitably occur between the report date and the final approval from NDIA.

These issues are illustrated by case studies and will be open for discussion with the group.
Considerations and tips for getting started with eye gaze

Cullen C1

1Link Assistive

Eye Gaze, Eureka Room 1, November 15, 2018, 3:00 PM - 4:00 PM

Abstract

In supporting people who are considering eye gaze technologies for someone with complex communication needs and/or need for computer access, we have encountered many requests for assistance in getting started during a trial and thereafter!

Well before the trial starts we will encourage families and carers, therapists and schools to access remote and e-learning tools to assist them in the process of learning about eye gaze.

We also engage in discussions to point out that there are several considerations to make the most of trialling an eye gaze system. Whether it’s face to face, on the phone or via online webinar sessions, pre-trial training is offered to individuals and families and those who are supporting them. The training covers positioning the equipment and the user, environmental factors, tracking, calibration and other important aspects of setup. These are also outlined on a guide sheet that is provided for reference during the trial.

The Tobii Dynavox eye gaze pathway (and other eye gaze learning curve tools) shows us the progression of eye gaze skills and provides suggestions of games and activities to develop those skills at each level. The Tobii Dynavox eye gaze games website is a great resource that points to a range of commercial software and online games to help develop eye gaze skills at different levels.

In this oral presentation we will highlight the important considerations and tips for getting started with any eye gaze system and discuss some online resources for the development of eye gaze skills.
Mobile phones, tablets and computers are now normal in everyday life. With increasing access to the internet via mobile devices and wireless technologies; it seems that everyday a new app, software, or even connected device is launched to make our lives more productive, organized and in control of our environment. Access to this technology is now not only normal, but also expected by most. However, many people with disabilities are not always given the opportunity to access the same technologies as their peers. This workshop will explore commercially available products for increased access to the same or similar technology for individuals utilizing power wheelchairs. Specific attention will be paid to Apple iOS mobile devices and iPads; including built in accessibility features and the complimentary products to increase or create usability when accessing via joystick and/or specialty controls on a power wheelchair. Through hands on training of connecting the Apple iOS iPhone and iPad, participants will better understand how to increase mobile technology utilization to facilitate client independence within their home and personal environments.

Objectives

- List the most common types of wireless technology and how they are integrated into everyday life.

1. Identify techniques to access mobile phone technologies, including via specialty input devices on a power wheelchair

2. Recognize pros and cons for the Apple iOS platform for pairing mobile phones and iPads with the power wheelchair.

3. Be able to pair and program a joystick and/or specialty controls on a power wheelchair with an Apple iOS device.
Converging worlds: Home Automation and Environmental Control Systems

Dean J1

1Technical Solutions

Housing, Eureka Room 2, November 16, 2018, 10:30 AM - 12:10 PM

Background

“Hello Google/Alexa/Siri, what’s the weather?”

The dialogue these devices are capable of is impressive, but the link to controlling actual devices such as lights, doors and other appliances is still evolving. They rarely take into account how the system will remain functional when the power, user’s speech or internet fails.

Aims

This presentation will provide a perspective to enable a therapist to look behind the glamour of a home automation system and analyse its components in relation to the needs of individuals living with disability.

Findings/Results/Outcomes

This presentation explores the differences between a home automations system intended for consumer use and a control system specifically designed for a person with disability. Workshop participants will gain an understanding of the building blocks within a system. This will give them the confidence and background to critically analyse a system design and questions to ask suppliers to ensure a product is relevant and provides reliable control to our clients.
Creating at opportunities: experiences of people exploring smart at with a health professional

De Jonge D¹, Aplin T²
¹Lifetec Australia, ²The University of Queensland

Aim: This presentation reports on a study which examined the experiences of 12 people with a variety of abilities who partnered with a health professional to explore the opportunities afforded them by smart technologies.

Advancements in technology provide many opportunities for people to live full lives, however it can be difficult to keep up with emerging mainstream and disability specific developments. Past experiences and expectations can also limit what people believe is possible. The AT journey involves many steps and generally begins with imagining possibilities and developing goals. This stage of the journey is not well understood and is often overlooked, with goals being set before possibilities are actively explored or solutions identified prior to life goals being developed.

Twelve people with a variety of abilities explored the opportunities afforded them by smart technologies with a health professional. This imagining experience was examined by interviewing the person following the session and analysing the recording and transcript of the session to identify transformative moments. Many people found these sessions to be useful in ‘exploring future possibilities’ and have been ‘blown away’ by the technological possibilities. An in-depth analysis of the strategies that precipitated transformative moments will inform the development of a consistent approach to helping people to explore the opportunities that AT present.
Creating efficiencies through efficiency

Wakeling F\textsuperscript{1}
\textsuperscript{1}Swep

Transport and Travel, Eureka Room 1, November 14, 2018, 1:00 PM - 2:20 PM

Aims

The development of an assistive technology database that provides initiatives through efficiencies that are evident to all stakeholders.

Findings/Results/Outcomes

By analysing the application submission through to the ordering processes of assistive technology SWEP have developed an in-house database to give stakeholders efficient, integrated and accountable services whilst providing positive outcomes for consumers.

Abstract (max 250w)

Since the inception of SWEP, the team have been working towards integrating pathways for stakeholders such as credentialing prescribers, triaging applications, ordering assistive technology using a priority of access paradigm, whilst ensuring the enhancement of the application process for the consumer.

It’s taken near on nearly 10 years in the making but, finally, after building many different systems SWEP have put the final element in place by creating a database that can ensure the appropriately credentialed prescribers are submitting the most appropriate applications by saving time money and effort for all stakeholders from beginning to end.

An overview of this innovative and approach are explored in this presentation to demonstrate how it can be used in many different aspects to create efficiencies for anyone wanting to seek support in the AT arena.
Curious about ‘smart speakers’? A demonstration and evaluation of Google Home, Siri and Amazon Echo
Phuah T, Smith G

Smart Speakers, Eureka Room 3, November 15, 2018, 10:30 AM - 12:10 PM

**Curious about ‘smart speakers’? A demonstration and evaluation of Google Home, Siri and Amazon Echo.**

This entry-level session will introduce participants to the use of voice-controlled digital assistants including Apple’s Siri and the Amazon Echo and Google Home ‘smart speakers’. A digital assistant has the potential to perform a range of home control functions - come along to find out more about the functions of these devices and considerations for their set-up and implementation.

Voice control promises a quick and convenient way to interact with a device. Potential benefits of using voice control include perceived simplicity of use, improved aesthetics and speed of operation (Judge et. al., 2009). While there are concerns about errors in recognition and a lack of reliability when using speech input (Judge, Robertson, & Hawley, 2011), this may be addressed with improvements in contemporary speech recognition algorithms and increased processing speeds (Myburg et al., 2017).

While voice control has been available for several years, the use of voice to operate home or environmental control systems often required bespoke solutions. These solutions typically involved expensive hardware and software, specialised skills to set-up, and extensive user-training, determination and resilience to implement with any success (Judge et. al., 2009). As a result, assistive technology professionals have expressed a reluctance to recommend voice-control, and this input method was often considered a last resort, if at all (Judge et. al., 2011).

The increased availability of everyday technologies that can effectively be used with voice input presents an opportunity for a wider range of people to utilise this access method. The session will include practical demonstrations and present findings from user-experiences, extensive testing and research. Differences among the three assistants will be highlighted, including responsiveness and the availability of alternative access options. The strengths and challenges of implementing each system will be discussed and compared with the use of other options for home control.
Curious about ‘smart speakers’? Meet Google Home and Amazon Echo.

Phuah T

1Charles Sturt University

Curious about ‘smart speakers’? Meet Google Home and Amazon Echo.

This entry-level session will introduce participants to Amazon Echo and Google Home ‘smart speakers’. Come along to find out more about the functions of these devices and considerations for their set-up and implementation.

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The increased availability of everyday technologies that can be used with voice input presents an opportunity for a wider range of people to utilise this access method. This session will introduce smart speakers and discuss their potential for a range of home control functions.
Noah has cerebral palsy and is the founder of Disability Tek. Graduating from high school in 2016 Noah was set to embark on further studies in digital media, when a letter he wrote to Tim Cook, the CEO of Apple, was picked up and helped change the way disabled people could access Apple products. Having spent years liaising with various software and hardware companies, always trying to improve the way he could use technology for himself and with the encouragement of family and friends, Noah decided to set up Disability Tek, to help others access and share the best possible technology available to improve the lives of people with a disability.

Disability Tek is a platform for people with disabilities and their support networks to share and learn about assistive technologies that may enable them to be more connected and empowered in their daily lives. Our ideology is ‘Help others with disabilities access technology by sharing how you use it’.

Disability Tek offers opportunities for people to upload their current ‘User Set Up’ so their personal experiences and knowledge about assistive technology can be shared with others. This includes pictures. By being able to upload visuals as well as written information individuals are given the opportunity to visually see how an individual user is working their set up. There is also a ‘News’ section where articles are posted, focusing on innovation and relevant assistive technology topics and ‘Forums,’ for people to share and discuss matters related to using assistive technology.

www.disabilitytek.com
Driving Innovations in Assistive Technologies: the Medical Device Partnering Program (MDPP)

Hobbs D\textsuperscript{1}, Reynolds K\textsuperscript{1}, Close J\textsuperscript{1}  
\textsuperscript{1}Flinders University

AT Innovations, Courtyard Room, November 15, 2018, 1:30 PM - 2:30 PM

Aims:

The Medical Device Partnering Program (MDPP) was established in South Australia in 2008 to be an ideas incubator for growing the local health technologies sector. The unique engagement model aimed to leverage university research expertise to solve real world problems in collaboration with end-users, health experts and local industry.

Based at Flinders University in Adelaide, the MDPP aimed to overcome the inherent challenges universities faced in contributing to the development of new medical devices and assistive technologies (ATs). The Program is unique because it focuses on the very early stage of device development, turning ideas into proven concepts.

Results and Outcomes:

The Program has developed reliable processes and tools that enable partners to rapidly work together under low risk conditions. It is able to leverage a diverse range of expertise to contribute to product conceptualisation, including health professionals, manufacturers, investors and service providers. The focused scale of 250-hour projects, combined with a 30-hour market evaluation, delivers tangible outcomes for clients. Since 2008 the Program has delivered 2 products to market; 11 patents; 11 products in clinical trials; 10 new SMEs; 33 job opportunities; 30 local manufacturing opportunities; and 13 opportunities for service providers. This presentation will highlight how the Program operates.

ATs represent approximately 15% of the ideas developed through the MDPP, including mobility devices, technologies for improved independence and rehabilitation tools. The Program is expanding nationally in 2019, providing a great opportunity to highlight how a National MDPP model will engage end-users within the AT and ageing sectors.
Aims

To present real life experience of prescribing a dynamic arm support for a 9 year old boy with Spinal Muscular Atrophy
To discuss and explore the challenges experienced through this prescription and identify learnings with applications for future prescriptions of this type.

Overview

Potential need for Dynamic arm support identified and several option trialled. Recommendation for arm support was occurring concurrently to prescription of new powered wheelchair. There was extensive consultation between different suppliers and therapists involved in the supply and prescription of different components of these, however there were still issues with mounting of the Dynamic Arm Support to the new Power Wheelchair. There was also a need to adjust the set-up of the dynamic arm support and for the user to learn how to use this item in conjunction with other Assistive Technology. Changes in the client function and physical presentation during period of the case study provided further challenges. Revised Upper Limb Module for Spinal Muscular Atrophy was used as an outcomes measure as well as achievement of functional goals identified by the client at the beginning of the prescription process.

Outcomes

There were some difficulties encountered initially with mounting of the arm support and fitting to paediatric client, however as these were overcome and 4 of 5 functional goals were achieved. There have also been some issues with use at school and maintenance, these will also be discussed with recommendations for things to consider for future prescriptions.
Electronic assistive technology - real life experiences, and strategies to promote success when introducing new technologies to people with disabilities.

Hockey S\(^1\), Milazzo S\(^1\), Brennan L\(^1\)
\(^{1}\)ASSISTTherapy Services

Access Methods, Courtyard Room, November 15, 2018, 10:30 AM - 12:10 PM

AIMS:

- To discuss factors to consider when introducing new electronic assistive technology to people living with complex disabilities
- To illustrate key learnings of Assistive Technology Prescribers when introducing new electronic assistive technology to people living with complex disabilities

FINDINGS/RESULTS/OUTCOMES:

- Increased understanding of factors to consider when introducing new electronic assistive technology
- Increased understanding of strategies to support successful introduction of electronic assistive technology
- Insight into the experience of selecting electronic assistive technology for people living with complex disabilities, using real life examples

Abstract (85):

Mainstream use of technology is rapidly expanding. As a result there has been an increased awareness of products that may benefit people living with disability. Realisation of what is now possible through the use of technology has broadened the scope of practice for Assistive Technology Prescribers.

There are numerous factors to consider when introducing new electronic assistive technology to people living with complex disabilities. This presentation will use real life examples to provide insight into selecting electronic assistive technologies, and strategies to support successful outcomes.
The Royal Brisbane and Women’s Hospital, Rehabilitation Engineering Centre (REC) has been assessing, designing and fabricating custom seating systems for people with complex postural and pressure management needs for nearly four decades. While clinical outcomes have been good, the team have struggled to find much pre-existing research to inform their clinical and design decisions.

For the past 15 years the REC team have undertaken a range of small projects aimed at building an increasing evidence base for their work. A new partnership with a research team from James Cook University in Townsville/Mackay has opened a broad range of new opportunities to make significant advances in the field using techniques developed in the automotive industry.

The aim of this collaboration is to develop a computer simulation of a seated person that may be used to inform the design of custom cushions. The first phase of this project has involved the design and construction of a cyclic testing rig to gather baseline material data. At the same time a student led project has been gathering data and investigating factors related to comfort and function in a range of simple REC cushions used by patients for post-surgical pain management. The data from these two sources will be used to adjust the computer model. The paper outlines the challenges in designing and constructing the rig and developing the protocols for testing that will allow for meaningful translation into clinical practice.
Eye-Gaze Technology: Innovations and Current Opportunities
Hughes E, Muscat K

Communication, Eureka Room 1, November 16, 2018, 10:30 AM - 12:10 PM

AIMS:

The recent introduction of the NDIS in Australia has brought eye gaze technology to a wider range of clinicians and potential eye gaze users. However, for those new to eye gaze it can be difficult to distinguish the differences between the options. For experienced clinicians it can be difficult to keep up with the developments in technology.

This presentation will provide an overview of the currently available eye gaze options including:

- software and hardware options,
- specialised and mainstream possibilities,
- limitations of current eye gaze technology,
- implications of device selection on clinical practice, future support needs and general implementation,

OUTCOMES:

Clinical experiences and knowledge will be shared by experienced members of the Zyteq assistive technology team enabling the audience to develop an increased knowledge of the current options. This knowledge can be shared with clients and team members to assist with the process of choosing the most appropriate eye gaze technology for the individuals you are working with.
Factors that enhance/inhibit children with cerebral palsy, to access switches for leisure and communication

Beauchamp F\(^1\)
\(^2\)Cerebral Palsy Education Centre

Switch Access & Control, Eureka Room 1, November 16, 2018, 1:30 PM - 2:30 PM

**Aim:**
This paper aims to describes the factors that enhance/ inhibit children with severe cerebral palsy and complex communication needs to access switches for leisure and communication.

**Method:**
A qualitative methodology using semi-structured interviews was used with a purposive sample of eleven therapists.

**Results:**

*Theme 1: Child traits that affect how a child learns*

Switching activities need to promote success, be meaningful and motivating to the child. “It is important that the child sees that they are a learner, they have something to say in the world and they understand the purpose of switching and voice output and how it can help them”.

*Theme 2: Belief, philosophy and knowledge of therapists;*

Therapists should have open expectations that ‘kids with severe cognitive challenges can move on quite quickly from one switch to using two”.

*Theme 3: Supportive learning environments*

Parents are influential on successful outcomes and it is essential that “Once we’ve established a way that a child can be set up to use a switch at our centre, we make sure that the family have that exact same set up at home”.

*Theme 4: Complexities of learning to use switches and a speech-generating device.*

“Movement to access switches is not something that develops spontaneously, it needs to be ‘taught’ to many children”. It is essential to teach children language and communication in parallel, whilst learning the operational (motor) skills.

**Conclusion**
Supporting children with cerebral palsy and complex communication needs to access switches for leisure and speech-generating devices is a multi-layered and intricate process that takes time. Therapists require a large knowledge base about movement, communication and assistive technology in order to effectively support children and families.
From zero to hero: how do you transition from an ‘institution’ to a smart home?
Milazzo S\(^1\), Hockey S\(^1\), Brennan L\(^1\)
\(^1\)ASSIST Therapy Services

Technology for all, Eureka Room 2, November 14, 2018, 1:00 PM - 2:20 PM

AIM:

- To illustrate key learnings of Assistive Technology Prescribers supporting individuals to move from an institutional environment to a newly designed home with provision for a range of new assistive technology

FINDINGS/RESULTS/OUTCOMES:

- Insight into the experiences of Assistive Technology Prescribers supporting people living with complex disability to consider new community living options
- Increased understanding of the complexities of selecting appropriate assistive technology to support capacity building within an institutional setting
- Knowledge of the key themes identified by Assistive Technology Prescribers working within a project framework to support individuals with complex disability moving to community housing

ABSTRACT (128):

With the introduction of the National Disability Insurance Scheme, new opportunities now exist for some individuals to consider alternative accommodation options. One example of this is a current project in South Australia, where people living with complex disability in an institutional setting are being supported to consider community living.

This presentation will outline the experiences and key learnings of Assistive Technology Prescribers working as part of this project using real life examples. Complexities of introducing new technology will be explored, as well as strategies to increase people’s understanding of the potential for assistive technology to increase independence. Key themes discovered throughout the implementation of the project will be described, including the impact of an institutional environment on the choice, provision and outcomes of assistive technology and therapy services.
HalleyAssist: Technology trials of a non-intrusive home automation and care system

Branch P¹

¹Swinburne University Of Technology

Smart Technologies, Eureka Room 2, November 15, 2018, 1:30 PM - 2:30 PM

Modern sensor networks installed in the home have great potential to reduce social isolation, improve health outcomes, reduce healthcare costs and potentially allow an older person to remain in their home rather than having to move into an aged care facility. Such systems may control lighting through motion sensors, household security as well as provide reminders regarding hydration, medication and social engagements.

They can also be used to detect when something is wrong. Is the user eating regularly? Are they drinking adequate amounts of water? Are they taking their medication? Are they getting enough sleep? Is there an emergency such as them having fallen and are unable to get up?

Such systems have great potential to address these issues but also raise questions related to usability, privacy and security. Systems are better accepted if they are unobtrusive. Most people do not want their every move potentially monitored. Nor do they want it known when they are and are not at home.

HalleyAssist is a system we have developed to help older people and people with a disability remain in their homes longer than might otherwise be possible. It incorporates capabilities of home automation as well as anomaly detection based on wirelessly connected sensors.

In this talk we will discuss the capabilities of this system, and what we have learnt from end user trials of the technology. We will report on the reaction of users and make some general observations as to how this technology can affect aged care. In particular we will discuss the potential social impact of such technologies on families and friends of the person using the system as well as how the system could potentially reduce healthcare costs. We will discuss how it addresses issues of usability, privacy and security. Finally, we will discuss how it can be used to detect unusual patterns of behaviour that may indicate a chronic or acute health issue that needs addressing.
High tech eye-gaze: processes, software and strategies to enhance practice

Baldock R\(^1\), Bain A\(^1\)

\(^1\)Cerebral Palsy Alliance

Eye Gaze, Eureka Room 1, November 15, 2018, 3:00 PM - 4:00 PM

Aims: The aim of this paper is to describe processes, software features and strategies we have found work to enhance our practice in the assessment, trial and intervention phases when supporting our clients develop access skills required for high tech eye gaze.

Findings/Results/Outcomes: When a person has limited access options associated with a significant physical disability, exploring their potential for using high tech eye gaze, as a method of access, is often identified as a goal. This is a complex area of assistive technology with many factors at play. A thorough and comprehensive client centred assessment, trial and intervention process is required to help determine if it will provide the client with increased independence and/or greater participation. Over the years our practice with supporting our clients with this journey has developed as we have read, questioned, listened, reflected and adapted our ways of working. This paper describes what we have found helpful through the pre-assessment, assessment, trial and intervention phases. Three main areas are explored: procedures/systems we have used to enhance the process and outcomes for client’s; specific software features and settings we have found useful to optimise, customise and accommodate for individual needs; and therapeutic strategies we use to support the development of client’s skills and functional use of this method of access.
Housing accessibility for clients with complex disability

Hockey S¹, Milazzo S¹, Brennan L¹
¹ASSIST Therapy Services

Housing, Eureka Room 2, November 16, 2018, 10:30 AM - 12:10 PM

AIMS:

- Outline issues encountered when funding requirements for new community housing produce housing to a standard inconsistent with the needs of people living with complex disability
- To describe the experiences of Occupational Therapists working with people living with complex disability to plan their move to community housing

FINDINGS/RESULTS/OUTCOMES:

- To provide increased understanding of issues that may arise when matching the needs of people with complex disability to housing that has been built to a standard
- Strategies to increase the probability of successful housing outcomes for people with a complex disability

ABSTRACT (125):

The idea of universal design and increasing accessibility is nothing new. A number of housing projects have already been completed which demonstrate the benefits of moving beyond existing frameworks and standards to achieve a truly accessible home environment. Yet there are still difficulties achieving contemporary living environments which are functional and adaptable for all. Currently in South Australia, building is underway for new community housing. A challenge arises when considering housing accessibility for people with highly complex disabilities whilst working within existing Standards and Guidelines. In this presentation, the experiences of Occupational Therapists working with people with complex disabilities to ensure accessible housing will be discussed. Strategies to increase the probability of successful housing outcomes for people with a complex disability will also be provided.
How to make co-development of technology accessible for people living with dementia and family members: Lessons from the Florence Project.

Liddle J¹, Worthy P¹, Frost D¹, Wiles J¹, Florence Project Lived Experience Expert Reference Group¹

¹Florence Project, School of Information Technology and Electrical Engineering, The University Of Queensland

Co-Design & User Experience, Eureka Room 2, November 16, 2018, 1:30 PM - 2:30 PM

Background and aims: People living with dementia have a long history of being excluded from contributing to research, and are affected by stereotypical assumptions about their likely willingness and capacity to use technology. This has limited the development of appropriate technology for this community. The Florence Project aims to co-develop technology (and the related research) with lived experience experts: People living with dementia and their care partners. As an initial step, it was clear that traditional board meeting or workshop approaches would not be suitable, and an approach to co-development that was accessible and acceptable needed to be developed.

Finding/Results/Outcome: People living with dementia and their care partners were sought to form a Lived Experience Expert Reference Group. At present 6 people living with dementia and 10 care partners form the group. During initial consultation, they were asked about their perspectives on technology, the project, and how their participation could be optimised. Consultation with lived experience experts occurred in various settings and through media they requested including home visits, campus meetings, video-conferencing, telephone and email.

In combining their feedback, co-development requires the following aspects to be accessible for people living with dementia and their care partners:

- Flexibility in communication, time, place and roles for participation.
- Supportive locations and people, recognising the needs and demands of group members’ various roles.
- Payment and recognition
- Access to information and findings.

The recommendations and experiences of the Lived Experience Expert Reference Group from the Florence Project may assist others in developing co-development approaches.
Aims

This paper presents an overview of the ergonomic assessment towards Assistive Technology (AT) for individuals with Spinal Cord Impairment (SCI) or myelopathy. When a severe SCI individual is admitted to a Spinal unit from ICU, everything is done for them leaving almost no opportunity to be independent in tasks or exercising any real control over what happens in a day. This impacts the individual’s ability to perform critical activities of daily living (ADL) causing a negative impact on their quality of life. AT aims to bridge this gap to augment function and increase independence to allow them to begin re-establishing their ability towards independence, four critical criteria are considered: The person, the task/activity needed, the physical and non-physical environment around them and the technology tailored for their impairment.

Findings/Results/Outcomes

From the assessment carried out, precaution limitations to be considered are the patients’ need for visual, cognitive or existing learning support. The depth of impairment largely affects the decision but residual capacities is also needed to be taken into account as a good pairing between the user and the selected modality can highly influence their quality of life. The human/technology interface explored for the individual derives from three factors that takes into consideration the operation of the device: the control interface, the selection set and the selection method. With delivery of the product and services customised to the patient rather than the patient to the product, the success of the human factors assessment are evident in the positive feedback and rehabilitation of the patient. (250 words)
In control of my life using a single switch.

Stories of empowerment.

White M

1Ability Centre

Switch Access & Control, Eureka Room 1, November 16, 2018, 1:30 PM - 2:30 PM

Independent access to the environment and telecommunications enables choice and control for a person with a physical disability.

When the only way to access technology is by using a switch, a significant amount of time, patience and effort along with a knowledgeable support team is required to achieve a successful and life enhancing outcome. It also takes time, effort and funds to maintain upgrade and repair such technology.

This presentation will examine several case studies tracked over a two-year period, with no defined limits on support time to set up and maintain technology. These single switch users are now in control of their mobile phones and their environment.

It will highlight the joys and challenges faced on the journey towards independent control of the home environment.

It will also discuss the cost comparison of the technology versus the time to set up and support it and how this will be possible in an NDIS world, to reduce the risk of abandonment and avoid disappointment for those with limited physical access to technology.

The positive outcomes achieved by these single switch users have only been possible due to the determination of those involved and the availability of time to support them to achieve their life control goals.
Information Chains, Uses of Social Media Technologies and their Impact on Health Decision Making for People with Low Literacy

Molka-danielsen J1, Balandin S2
1Molde University College, 2Deakin University

AT Practice, Eureka Room 2, November 15, 2018, 10:30 AM - 12:10 PM

Information Chains, Uses of Social Media Technologies and their Impact on Health Decision Making for People with Low Literacy

Making decisions about health requires access to legitimate and credible sources of health information. People with low literacy, which can include people with disability or immigrants not speaking a local language, are at high risk of not receiving the right information to make decisions concerning their health, including assistive technology needs. Their access to information may be limited and sometimes information is transferred by long information chains with diminishing reliability, such as by word of mouth (e.g. with subjects receiving 2nd, 3rd, 4th hand knowledge) or unchecked data sources. Networks, including social media play an important role in sharing information in societies. While many studies focus on critical linkages between persons (nodes) of networks, Burt (1992) introduced the concept of "structural holes". He noted that networks can emerge and grow out of ongoing relationships. Such networks might be intended to accomplish a specific task such as sharing health information but may have structural holes, or gaps. Such gaps can provide both opportunities and challenges. We reflect on the use of technology such as social media applications and their potential impact on decision making. These include the typical chains of information from source to subject; how can social media (or alternative) technologies be used to maintain credibility of the information and what can be done for people of limited access to health information.
Informing Innovation: Pulling Together to Advance AT Research in Australia

De Jonge D¹, Schuhmann K¹, Layton N²
¹Lifetec Australia, ²Swinburne University

AT Research, Goldfields Theatre, November 16, 2018, 1:30 PM - 2:30 PM

INFORMING INNOVATION: PULLING TOGETHER TO ADVANCE AT RESEARCH IN AUSTRALIA

Aims: This panel aims to bring a range of stakeholders together to understand the work that has been undertaken in Australia to date, to imagine what assistive technology practice and service delivery (industry) could look like and to formulate a national agenda of research priorities related to AT.

Assistive technology is recognised as a powerful enabler however there are substantial gaps between need, provision and effective use of assistive technology. Much of the research on assistive technology in Australia has either been undertaken by individuals as part of research higher degrees or as a result of small grants from diverse sources. Research on disability has lacked a focus on AT, with audits of disability research in Australia in 2014 and 2017 noting a paucity of evidence around AT. Further, the current global drive towards AT research has not yet been addressed in Australia. This session will discuss research undertaken to date in Australia and how to leverage on this to build a body of knowledge to inform AT practice and service delivery. There are numerous questions to be answered but these cannot be answered in isolation. By working together researchers, organisations and communities can focus their energies to avoid duplication and progress the broader agenda of Assistive Technology. The ultimate goal of this session is to develop a community of AT researchers who will continue to work together on building a body of research that informs innovation in AT practice and service delivery.
Innovations in Telepresence Practice and Policy
Farrell L\textsuperscript{1}
\textsuperscript{1}Independent Living Centre Wa

Technology for all, Eureka Room 2, November 14, 2018, 1:00 PM - 2:20 PM

**Aim:** To discuss and share experiences surrounding policy development when introducing emerging technology as an access method for consumers.

**Outcomes:** This presentation will discuss the methods used to identify and evaluate telepresence technology, the learned experiences from trials, organizational and client perspectives as well as the evaluation of the product usage and the effect on Telehealth policy.

The availability and reliability of technology will play a significant role in closing the services gap experienced by those living in regional areas. It is necessary to be agile in service delivery and ensure that organizational policies and procedures remain up to date with changing technology. The Independent Living Centre WA conducted a review of service delivery methods with the aim of providing alternatives for clients who were physically unable to access our premises, due to geographical location, ability to travel or social support requirements. Currently telehealth services are offered to regional areas to compliment outreaches as part of state wide services. Given the increasing awareness of telehealth technology there has not been a similar increase in client engagement. As such an alternative access method was explored, Telepresence Robotics. Telepresence robots are those which can be controlled by a person in a remote location to move through an environment and interact with those present onsite during a live video stream. Telepresence robots are more common in an office environment. However, they offer an access method for clients in an agile and flexible way. This increased control to move about an environment opens a range of opportunities for the client and also raises policy and privacy considerations which vary from traditional telehealth guidelines. This presentation will discuss the methods used to identify and evaluate telepresence technology, the learned experiences from trials, organizational and client perspectives as well as the evaluation of the product usage and the effect on Telehealth policy.
Is Google Home enough?

Davis C², Verdonck M¹, Stewart R³

¹USC, ²Victorian Spinal Cord Service, Austin Hospital, ³Spinal Community Integration Service, Victorian Spinal Cord Service

Housing, Eureka Room 2, November 16, 2018, 10:30 AM - 12:10 PM

Aims: This paper explores the opportunity of using voice activated smart assistants as a mainstream alternative to environmental control units (ECU) from the perspective of occupational therapists who are not specialised in technology.

The recent proliferation of mainstream technology which enables affordable home automation provides an opportunity for those with significant physical disability, however it is unclear if these systems are reliable enough to replace bespoke/ specialised technologies. The improvement of voice recognition technologies means that it may be possible to replace switch scanning as a primary access method. Clinicians without technical expertise may be able to work with clients to find innovative solutions. Case studies of people with cervical spinal cord injuries will be presented describing their experiences of using smart assistants as a voice activated environmental control system.

Findings: The use of voice activated smart assistants offers a flexible and lower cost alternative to traditional ECU through internet access. Users report satisfaction with new abilities to access music, news content and internet access. However, there are also reports of frustration and challenges relating to the requirement for a strong wireless connection and multiple third party components to integrate for environmental control.

This is an emerging area of assistive technology but requires some careful planning and integration with existing assistive technologies to ensure safe and effective use.
Just like a mouse! Exploring software options for using eye gaze to control your windows computer

Cullen C

Link Assistive

Eye Gaze, Eureka Room 1, November 15, 2018, 3:00 PM - 4:00 PM

Abstract

Eye gaze technology has been widely used by people with physical disabilities for computer access. A range of activities for home, school and work such as reading e-books, playing games, web browsing, keeping up with social media, online banking and listening to music can be achieved by simply looking at the computer screen and using mouse controls with your eye movement.

We will be looking at the features of Tobii Dynavox Windows Control 2 and Grid 3’s computer control. These are two main options for eye gaze users to have full control of Windows apps, software, keyboards and to independently control the settings of their computer.

Windows Control 2 is software that uses Gaze Selection which is a two-step process that reduces the risk of unwanted clicks. The user looks to choose from a selection of mouse functions on the toolbar and then gazes on the area of the screen that they wish to perform that function.

Grid 3 uses Zoom to click and Dwell to click. With Zoom to click, the user chooses the type of mouse click required, and then looks at the area on screen where they want to select. Dwell to click is another alternative where you can left-click, right-click, double-click or drag, all without the need to physically press a button.

Throughout this presentation we will explore the settings required for best outcomes with eye gaze, and with video examples, we will compare the features of Windows Control 2 and computer control in Grid 3.
Landscape of AT Practice Levels

Verdonck M¹, Milgate W², de Jonge D³

¹Usc, ²Australian Catholic University, ³LifeTec

AT Policy & Funding, Eureka Room 3, November 14, 2018, 11:00 AM - 12:00 PM

Aims and method: This paper seeks to explore how levels of assistive technology (AT) practice are influenced by years of experience and preferred information seeking and professional development choices. A survey of allied health professionals (AHP) sought to examine assistive technology practices in Australia. The survey focused on frequency of AT practice and levels of AT: Level 1, mass produced mainstream consumer products with low complexity and risk; level 2 off the shelf, adjustable AT; Level 3 Complex AT solutions and level 4 customised solutions.

Analysis: Data were analysed to explore relationships between the levels and frequency of AT practice; levels of experience; preferred methods for seeking information and advice and professional development.

Findings: AHPs who recommended levels 1 and 2 AT were also statistically more likely to recommend levels 3 and 4 AT. Years of experience was not found to be related to levels of AT recommended. People who recommended all levels of AT were equally likely to rely of AT supplier for advice and information. People with less years of experience were more likely to rely on colleagues for AT advice. Although years of experience was not found to not be related to level of AT practice.

Discussion: This poses several questions including: what level of experience required to undertake level 3 4 AT practice; how frequently should people prescribe level 3/4 to be proficient and what level of support and CPD is required to support level 3/4 practice
Learning movements for communication and accessing technology
Beauchamp F\textsuperscript{1}, Cotter C\textsuperscript{1}, Porter G\textsuperscript{1}
\textsuperscript{1}Cerebral Palsy Education Centre

Skills-Based Sessions, Courtyard Room, November 16, 2018, 10:30 AM - 12:10 PM

The aim of this skilled based workshop is to gain an understanding of the complexity and strategies involved in enabling a child with a physical disability and complex communication needs to access Augmentative and Alternative Communication (AAC) aids and technology. This workshop will explore the movements required and some strategies to implement to support a range of children to learn the movements required to become more intelligible, autonomous communicators.

The workshop will cover:

- Information and strategies to understand movements and it’s importance in accessing AAC (electronic and non-electronic communication).
- Key movement issues for children with cerebral palsy that affect participation and learning including:
- Healthy positions and movements in cerebral palsy for active participation and learning throughout the day and throughout life.
- Selection of specialised equipment to enable positioning and access
- Parallel learning – developing intelligible movements for access to both electronic and non-electronic communication aids.
- Teaching/learning strategies to develop operational skills

- Video analysis and demonstrations will assist participants in this skill based workshop to understand that operational competence is only one part of developing communication competency and autonomy. Th child, family and health professionals working with the child need to work as a team to develop all that other communication competencies.
Making It Real...a quick dive into Maker and Open Source AT Solutions
Harraway D

Open Source AT, Eureka Room 2, November 14, 2018, 11:00 AM - 12:00 PM

ABSTRACT

The term "open source" can be used to describe hardware, software or processes that are shared freely in order to allow others to inspect, modify, or enhance their functionality. Makers use open source methodologies to make alternative options available to specific users or groups where access to them may be limited due to cost factors or other restrictions. This presentation will briefly examine a range of positive and negative experiences with Open Source and Maker Assistive Technology, offering learners to opportunity to evaluate the current state of play in this exciting space.
Measuring outcomes in AT service delivery

Friesen E

1Independent Researcher

Skills-Based Workshop, November 16, 2018, 10:30 AM - 12:10 PM

Across the Assistive Technology (AT) industry, researchers, policy makers, AT funders, and regulators are calling for evidence demonstrating outcomes of AT services. However, Australian research indicates that few AT Practitioners or AT service providers use outcome measures as part of routine service delivery. Many AT Practitioners are unsure about how to assess and select appropriate measurement instruments, or how incorporate them into service delivery processes.

In this workshop, participants will explore the use of outcome measures in service delivery evaluation and research. Participants learn about the development and psychometric evaluation of measurement instruments, and how published data can be used to select and implement appropriate measures. Participants will have opportunities to discuss outcome measurement instruments that have been developed for AT evaluation and research, and how these are being reviewed and refined for ‘real world’ clinical practice. Discuss case studies of services that have used outcome measures to evaluate and improve clinical service delivery in AT, and identify resources available to participants for further information and support for implementation.

By the end of the workshop, participants will be able to:

- Identify three major areas of “outcomes” in delivery of Assistive Technology services;
  1. Describe how specific outcomes measures fit into overall service evaluation frameworks and strategies;
  2. Evaluate possible data collection instruments and outcome measures using ten questions; and
  3. Identify three “next steps” in locating and evaluating existing outcome measures that may be suitable for their service setting.
Microsoft Accessibility
Masters D

Mainstream Technology, Eureka Room 3, November 16, 2018, 1:30 PM - 2:30 PM

This workshop presentation will provide an overview of Microsoft’s mission, including its key commitment to accessibility. An update will be provided for the AT sector on how Microsoft is embedding accessibility and assistive technology into its core platforms. The session will explore how AT users leverage innovations like native eye can control support for Windows 10, the Xbox adaptive controller and Dictate in Office365 to create new experiences for users and open greater social engagement and employment opportunities. It will also explore opportunities that Artificial Intelligence (AI) present to drive further innovation in user engagement with technology and how Microsoft is stimulating the development of accessible solutions through AI for Accessibility program.
Motorised doors are not born equal – how to specify a system that works

Dean J1
1Technical Solutions

Housing, Eureka Room 2, November 16, 2018, 10:30 AM - 12:10 PM

Background

There are many skilled technicians who can install a motorised door in a commercial setting. Most installers are not familiar with the application of this technology for a person with a disability and the other household members. It is up to the therapist to ensure the door system is described in adequate detail so an appropriate functioning package can be quoted for and supplied.

Aims

This presentation will provide a framework that will enable prescribers to analyse motorised door requirements for specific individual needs, and prepare specifications to be included as part of a home modification or development plan.

Findings/Results/Outcomes

A motorised door system will be broken into components so each part can be considered for its relevance to a specific client’s needs. Participants take away a framework they can use to prepare a functional, individualised door specification to achieve an optimal client outcome.
Open Source and the gold that lies within: The philosophy and movements that the AT sector should embrace.

McLennan T

Communication and Assistive Technology Service - Dept of Health WA

Open Source AT, Eureka Room 2, November 14, 2018, 11:00 AM - 12:00 PM

Open Source is the publication of information, designs or software source to be freely available for all to view and ideally, permitted to modify and improve upon.

Open Source philosophy and practice holds many benefits for Assistive Technology users, developers, suppliers, funding bodies and practitioners including:

- Greater flexibility for truly customisable solutions to meet the unique needs of AT users;
- Greater choice and freedom for both AT users and suppliers;
- Protection during occasions when suppliers or supports are lost;
- Potentially quicker provision of products and custom solutions &
- Reduced total cost of supply.

These benefits can be even more apparent in markets typical of AT, where highly customised products are needed in relatively low volumes. In these cases, alternative market/service models may be better suited.

Open Source works hand in hand with entities such as Maker movements to help turn ideas into usable products.

This presentation aims to:

- Explore some of the practical variants of Open Source Licences, their restrictions and legal ramifications in relation to AT;
- Look at some of the myths, misconceptions and blockages that restrict the true benefits of Open Source from being realised;
- Highlight some of the global initiatives and efforts of the Open Source community and Maker movements in relation to AT;
- Demonstrate examples of Open Source AT solutions (hardware and software) that owe their success to Open Source;
- Help you to find Open Source AT solutions (for yourself or your clients) &
- Show how you can help contribute to improving AT for everyone, globally.
Aims: Wheeled mobility and seating systems for people who have mobility issues are essential for participation in life. There are increasing amounts of published and online information about outcome measurements in this field, however, with limited quality, how can the clinician or service provider distinguish the best way of demonstrating effectiveness of one intervention over another? This Skills Workshop aims to discuss the range of outcome measurements used for seated positioning and mobility, including those that use technology. Together, the participants will identify gaps and potential for these.

Specific Learning Objectives:

- To enable participants to discuss and describe contemporary outcome measures for seating positioning and mobility
  1. To explore the role and the potential of emerging technologies for outcome measurement; including sensor and reality based technologies
  2. To identify gaps in outcome measurement

Outcomes

Outcome measurements in seating, positioning and wheelchairs have become essential in current practice to (a) justify the need for seating and positioning in health and social care settings (b) to ensure that equipment provided is effective at meeting the goals of the user and (c) as the basis for collecting research evidence in this field. In recent years, not only has there been a growth in traditional outcome measures available, but the emergence of new technologies mean that there are more ways than ever before to objectively measure practice. This presentation will provide a brief overview of traditional and new outcome measurements and identify gaps and future directions.
Piloting movement sensing technology in the delivery of cognitive support to people with traumatic brain injury within community living

Callaway L1,2, Fernando N3, Vouliotis A3, Carter B4
1Monash University, 2Neuroskills Pty Ltd, 3Deakin University, 4Residential Independence Pty Ltd, Transport Accident Commission

Smart Technologies, Eureka Room 2, November 15, 2018, 1:30 PM - 2:30 PM

Background: People with severe traumatic brain injury (TBI) can experience cognitive issues that impact long term support requirements and ability to live independently.

Aims: This research piloted use of new movement sensing technology developed for the well elderly – ‘Sofihub’ – with Transport Accident Commission clients with TBI who had returned to community living.

Methods: Mixed methods, case series design was used with four adult males with TBI. An occupational therapist met with each participant to set goals for application of Sofihub, with the aim to provide computer-generated audio-prompting for completion of those daily living tasks identified by the participant as requiring cognitive support. A computer programmer then set up Sofihub and sensors based on these individualised goals, with prompts activated by either time or movement. Baseline and outcome data on number of successfully completed tasks were recorded daily over 8-12 weeks duration. Semi-structured interviews were also undertaken at the start and end of trial regarding expectations for, and experience of, Sofihub.

Results: Sofihub was found to positively impact completion of nominated tasks (+7%-100% increased task completion rate compared to without Sofihub). Qualitative data indicated some unintended benefits, including reduced sense of isolation given availability of audio-prompts at home, capacity to modify prompts remotely, and procedural learning via repetition of task completion. Challenges were also identified, primarily missed prompts when the person was unexpectedly away from home.

Conclusion: Although further evaluation with larger samples is indicated, Sofihub offers promise in augmenting human support for cognitive assistance in daily activities after TBI.
Providing Complex Wheelchair Services under the NDIS

Carpenter B

Domiciliary Equipment Service

AT Use and Mobility, Eureka Room 2, November 14, 2018, 3:00 PM - 4:00 PM

Introduction/Aims

Domiciliary Equipment Service (DES) is a business unit of the Department of Human Services in South Australia (SA), providing assistive technology (AT) to support people across the sectors of disability, ageing and health. The DES Wheelchair and Seating Service (WSS) includes a clinical assessment service and a wheelchair and seating workshop and supports a refurbishment model.

The major program supplied has been the South Australian jurisdictional AT program with most end users in the process of transitioning to being participants of the National Disability Insurance Scheme (NDIS). There is a need therefore to change from a funded model to a fee for service model. The WSS has had to take steps to be NDIS ready and has been implementing a range of service improvements as part of this transition.

Findings/Outcomes

This presentation will describe steps taken including communication with stakeholders, mapping processes for our staff as well as our customers, developing customer information, development of quoting tools and work instructions, development of agreements and incorporation of the use of technology to improve processes.

There was a need to clarify roles of referrers and assessors, our own staff, the participant (end user) and the National Disability Insurance Agency (NDIA) in delivering a clinical seating assessment, wheelchair and seating solution, or both.

There have been challenges including incorporating or addressing repairs, people with deteriorating conditions and the ongoing nature of the support needed for these people and the overall length of the processes.
Rehabilitation Engineering Centre - How are we helping?

Mason O\textsuperscript{1}, Slattery P\textsuperscript{1,2}

\textsuperscript{1}Royal Brisbane And Women's Hospital, Rehabilitation Engineering Centre, \textsuperscript{2}Queensland University of Technology

Rehab Engineering, Eureka Room 3, November 14, 2018, 3:00 PM - 4:00 PM

Rehabilitation Engineering Centres have existed around the world for decades, helping individuals improve their quality of life through the application of engineering principles to a mix of everyday and complex problems. In order to assess how effective the solutions have been in helping individuals there have been many different assessment tools developed to assist services and clients objectively rate an intervention. For the Rehabilitation Engineering Centre of the Royal Brisbane & Women’s Hospital, the diverse diagnosis and ages of clients seen has made finding a broad and applicable questionnaire difficult. This paper will discuss the survey developed in-house, the results collected thus far, as well as plan to develop this work into the future.
Review of a prototyping kit to facilitate the development of client-specific adapted cutlery

Brown I1, Turnbull C1, Witcombe M1, Young D1

1AT&S NSLHD

3D Printing, Imaging and Custom Design, Eureka Room 2, November 14, 2018, 11:00 AM - 12:00 PM

Aim: To promote the use of modular cutlery prototyping kits to support the practice of clinicians without access to technical support and to achieve better outcomes for clients.

Outcomes: 11 Occupational Therapists across NSW who have used the prototyping kit in their clinical practice were surveyed regarding its effectiveness. The results emphatically demonstrate that the prototyping kit is seen as beneficial to clinical practice and client outcomes relating to adapted cutlery (• client acceptance, • time to develop, • alignment with client needs).

Clients with impaired upper limb function may require the use of adapted cutlery to increase their functional independence in daily tasks such as feeding. Individual variations in impairment, particularly within the SCI community, mean that commercially available adapted cutlery often does not suit an individual client’s needs. In response, a low-cost, modular, prototyping kit was developed to facilitate therapists in developing client-specific adapted cutlery. A review was conducted to assess the effectiveness of the kit in achieving this aim.

The prototyping kit was developed to facilitate the practice of OTs developing client-specific adapted cutlery where commercially available options do not meet the client’s needs. It achieves this in three ways:

- It gives a working prototype that can be used with clients to confirm the design’s effectiveness,
- The prototype precisely communicates the orientation and arrangement of the desired cutlery to the fabricating technician,
- The modular design specifications can be accurately captured by technicians allowing for replicas to be made in the future without access to previous cutlery.

The modular kit is particularly effective for rural and remote therapists who may have difficulty trialling commercial equipment and accessing local services for custom fabrication.

11 Occupational Therapists across NSW reviewed the kit as a tool to facilitate their practice. Responses demonstrate that therapists find the kit enhances their practice, typically gives better results, and reduces the time to develop adapted cutlery to meet the needs of individual clients and suggests that expanding availability to prototyping kits would be beneficial.
Robust Credentialing Frameworks for Prescription of Assistive Technology

Markham D

1State-wide Equipment Program

AT Policy & Funding, Eureka Room 3, November 14, 2018, 11:00 AM - 12:00 PM

Aims

To develop a robust Registration and Credentialing Framework which aligns with best practice and aims to ensure safe and effective prescription of assistive technology, with a focus on competency based training.

Findings/Results/Outcomes

The SWEP Prescriber Registration and Credentialing Framework has been successfully implemented for over 12 months now. With feedback from prescribers and the industry, improvements continue to be made along the way.

Abstract

The State-wide Equipment Program (SWEP) introduced a revised Prescriber Registration and Credentialing Framework (The Framework) in July 2017. The key purpose of this Framework was to ensure suitably qualified and skilled prescribers were prescribing assistive technology within the guidelines of our funding bodies and aligned with best practice.

In developing The Framework other relevant national and international credentialing models were considered and will be discussed.

The Framework acknowledges the complex interactions between clients, the assistive technology, the environment and the skills of the prescriber. The Framework aims to create a structure where assistive technology is categorised into logical types and then sub-categorised based on client complexity and prescriber skill level. All the necessary administrative pathways have been developed to support the Framework.

The Framework provides formal pathways and processes for prescribers to register for the first time (as an inexperienced prescriber), upgrade prescriber status to a higher level, re-credential at the same level, or register for the first time as an experienced prescriber.

The role of competency based education is also acknowledged and there is provision for education providers to have their programs formally endorsed.

Going forward SWEP will continue to explore the expected learning outcomes or performance criteria required of prescribers and the various ways professional competence can be demonstrated.
Rocky Bay’s experience in delivering this course to seven individuals living with disability/family carers.

Smitham D

Rocky Bay

Co-Design & User Experience, Eureka Room 2, November 16, 2018, 1:30 PM - 2:30 PM

During 2017/2018, Rocky Bay delivered a Cert IV AT Mentoring course to seven individuals living with a disability or caring for a family member living with a disability, who had some experience using Assistive Technology. Training was funded by the WA Department of Communities, Disability, and included some financial support for travel/accommodation for participants from rural locations.

The course was developed and is owned by AT Australia (formally ILC NSW), following a successful pilot project conducted in NSW and Tasmania, and is accredited through the Australian Skills Quality Authority (ASQA). The course was delivered under a collaborative third party agreement with Assistive Technology Australia.

Course Aim:

Provide participants with the knowledge and skills to perform as an Assistive Technology Mentor, supporting other people with disability and/or carers to make informed choices about their assistive technology and home modification needs.

Rocky Bay delivered 23 days of training spread over twelve months, covering the broad range of AT options available. Participants used a modified SETT framework for information gathering and decision-making. In addition to regular assignments, each participant undertook a work placement portfolio of 100 hours to demonstrate a mixture of simulated and direct work practice.

This presentation will provide details of the course content, how the training provided, and the challenges and learnings achieved along the way. We will demonstrate successes through the individual outcomes achieved and discuss how this role can foster capacity building, choice and control in individuals with disability, in support of existing services and in line with NDIA AT strategy.

Rocky Bay has secured further funding to deliver this course to another 7 participants during 2018/2019. Once again the course will be delivered under a collaborative third party agreement with Assistive Technology Australia.
Scripting power chairs, right chair for the right job and best outcome

Smelter R

Ottobock

AT Use and Mobility, Eureka Room 2, November 14, 2018, 3:00 PM - 4:00 PM

This session aims to clear away confusion and misunderstanding about scripting power wheelchairs. This paper has four key objectives:

- To assist understanding of the difference between front wheel drive, mid wheel drive and rear wheel drive power chairs;
- To discuss the different characteristics of these drive bases;
- To build knowledge of the differences of weight distribution on performance;
- To outline the power base and alternative controls for AT users.

Participants will understand which power wheelchair base and what power seat systems will be best for the individual’s environment. The second part of the puzzle is working out what control system and drive control options are best for your client including: low end, on/off, and more advanced systems. Connectivity to smart phones, the home environment, and even alternate controls such as head array or chin control will be explained, offering a better understanding of power wheelchair scripting, and ensuring the right chair for the right job and the best outcome.
Accessing everyday devices, appliances and smart technologies can sometimes be difficult and seem impossible for some individuals with disabilities. But there are solutions! Several environmental control (ECU) options are available to support everyone to access activities that we enjoy at home, school or work.

This spotlight on an array of environmental control options will demonstrate live some basic home automation that doesn’t require drilling into walls. Find out about some simple addons that act as transmitters or receivers to allow the control of the environment. You can use a range of access methods such as eye gaze, mouse control, voice control, switch access or touch with these environmental control solutions. Whether you’re using infrared, radio frequency, Z-wave, Wifi or EasyWave, there are a range of simple alternatives to control your doors, lights, blinds, television, plug-in appliances and more.

This demonstration will show you how to simply set up a table lamp (or any plug-in appliance) and operate it via switch, tablet app via touch and using eye gaze or voice control with an environmental control page set on a speech generating device. Children and adults will benefit from these set ups for learning and independence in a range of environments.
SoftWheel represents cutting-edge wheel engineering & design, features patented technology that puts suspension directly into the wheel.

The unique technology goes into action only when the wheelchair encounters an obstacle or rough terrain, providing a smoother, more energy efficient ride.

SoftWheel technology features:

- **In-Wheel Suspension**: 3 suspension arms and dampers are built inside the wheel and compress to absorb shock
- **Rigid Rim**: the wheel rim is always rigid and strong, while the suspension actuates to provide shock absorption
- **Automatic Actuation**: the suspension arms automatically compress when encountering an obstacle or rough terrain, and the arms remain rigid and strong over flat surfaces
- **Rapid Shock Reset**: suspension arms immediately reset and return the wheelchair – and the rider, to a lever ride
- **360° Suspension**: arms are set equidistant around a central hub to provide shock absorption, no matter the angle of impact of the obstacle

With SoftWheel, fewer vibrations are transferred to the wheelchair frame and to the rider’s body, which can help reduce back pain and increase comfort for the rider. In addition, SoftWheels are more energy efficient and help preserve forward momentum, thereby improving the riding experience and can also reduce fatigue.

SoftWheel is available to fit most standard wheelchairs, and features a quick release/attachment axle pin.

SoftWheel represents a significant innovation to one of the oldest motion devices in the world.
Speech generating devices – the experience and meaning ascribed to these devices

Verdonck M¹, Ripat J², Gacek C², McNicol S²

¹University of the Sunshine Coast, ²University of Manitoba

Communication, Eureka Room 1, November 16, 2018, 10:30 AM - 12:10 PM

Speech generating devices are a type of essential augmentative and alternative communication (AAC) for those with speech limitations. While the benefits of these devices are implied, understanding the complexity of living with and using these devices is also required. This metasynthesis integrates the emerging qualitative literature exploring the experiences and the meanings of these devices by people with complex communication needs and their closest communication partners. A systematic review of the literature identified 21 original articles suitable for analysis using thematic synthesis (Thomas and Harden 2008). A lengthy process of analysis lasted several months and involved a research team of four. Thirteen descriptive sub-themes were identified and assembled into overarching, analytical main themes (a) It’s an Inefficient Voice, (b) It’s Not a Natural Voice, (c) Making the Most of This Voice, (d) It’s My Voice, (e) It’s More Than a Voice, and (f) Having a Voice: Being Heard. Findings highlight the limitations of devices, the impact of societal expectations as well as the opportunities for empowerment and participation provided by speech generating devices.
Still here and needing assistive technology: the complex needs of polio survivors

Cantrill S¹
²Polio Australia

Neurological Conditions, Eureka Room 2, November 15, 2018, 3:00 PM - 4:00 PM

It is estimated there are up to 400,000 polio survivors “still here!”, making polio survivors the largest physical disability group in Australia. Many live with the Late Effects of Polio, commonly experiencing fatigue, weakness and pain, but these symptoms are often dismissed as simply “part of the ageing process”. In reality, there are physiological reasons why some people with the Late Effects of Polio have a neurodegenerative condition, requiring customised services and equipment. Polio Australia will explain why polio survivors experience muscle weakness, significant pain and fatigue, sleep disturbances, breathing and swallowing issues and impaired thermoregulation, to assist health professionals in understanding how best to manage these health issues.

Assistive technology needs of many polio survivors will change over time, as their symptoms progress and evolve. Using case examples of polio survivors, this presentation will discuss how assistive technology prescription can be used to assist mobility, home and vehicle safety and respiratory sufficiency. Addressing the challenges of funding for much-needed equipment and services will be discussed, given their unique experience of evolving needs and use of assistive technology, to help people get the right options at the right time.
Teaching ‘Design Thinking’ to tomorrow’s assistive technologists: The Swinburne University Design Factory

Williams A¹, Mattila P², Layton N¹
¹Faculty of Health, Arts and Design, Swinburne University of Technology

Education & Skill Development, Eureka Room 1, November 15, 2018, 10:30 AM - 12:10 PM

ABSTRACT

Technology is rapidly transforming human occupation, presenting new opportunities for participation for people experiencing disability and challenging traditional professional roles. Outcomes for technology users depend upon the calibre of products and services available. Technology availability is influenced by many factors including design ideas, resourcing, manufacturing capability and the supply chain. The World Health Organisation’s Global Priority Research Agenda for assistive technology (2017) call for:

- An increase in the competence and capability of users and professionals to develop high quality and affordable products to meet a diversity of needs;
- Exploration of the way ‘pervasive design principles’ and technological standards can help meet unmet need.

AIMS This paper describes the development and preliminary outcomes of the Swinburne Design Factory Project. This inter-professional and problem-based learning course is designed to facilitate technological solutions to authentic problems. Entry-level Masters’ occupational therapy students collaborate with design students in a year-long design project based at Swinburne, Victoria, or Aalto University, Helsinki. The course aims to equip students with transformative knowledge and skills in design and development of information and assistive technologies.

OUTCOMES

The Design Factory subject is in its second year. Data from the initial cohorts will be presented to:

- Illustrate how design knowledge and skills can be creatively embedded into curricula
- Demonstrate the impacts and outcomes of ‘design thinking’ for occupational therapy and potentially other assistive technology practitioner disciplines.
Technology for All: An Advanced Assistive Technology project in regional Australia.

Kong K

Rocky Bay

Technology for all, Eureka Room 2, November 14, 2018, 1:00 PM - 2:20 PM

This oral presentation describes the learning's and successes of a rural and remote AT project undertaken by Rocky Bay between Oct 2015 and Oct 2017. The project focused on improving independence and participation of people with disability in daily activities, using environmental control devices and/or monitoring/alerting technologies.

A Perth based project team delivered services in Geraldton, Albany, Bunbury, Kalgoorlie and Broome, in collaboration with professionals from local disability organisations. Participants presented with a range of diagnosis for example Intellectual Disability, Acquired Brain Injury, Multiple Sclerosis and Visual Impairment.

Project aims:

- Improve independence and participation of people with disability in rural locations
- Understand the AT needs of those in rural WA
- Raise AT awareness among participants, carers, professionals and organisations in rural WA:
  - demonstrate the capacity of technology to improve quality of life
  - increase capacity of carers and professionals to support the use of AT
  - increase skills and knowledge of individuals in the range of AT options available
  - prepare for NDIS - be informed for future planning
- Increase understanding of the challenges in using AT in rural areas and strategies to overcome
- Understand investment requirements in terms of cost and time

Previous AT projects undertaken by Rocky Bay, within metropolitan Perth, provided significant learnings that supported and enabled optimum delivery of this project.

This presentation will examine the project; present case studies and outcomes, consider the challenges and successes of delivery in rural locations, and provide recommendations for future service delivery.

SUMMARY

Technology of All has focused on the provision of emerging technologies for people with disability living within regional Western Australia supported by a range of disability service providers. An important goal has been to increase the skills and knowledge of both clients and therapists in the field of emerging technologies.
The Challenges and Triumphs of AT: A Users Perspective

Potgieter K1, White C1

1Cerebral Palsy Alliance

Virtual, Augmented and Mixed Reality, Courtyard Room, November 14, 2018, 3:00 PM - 4:00 PM

For a person with a disability, the ability to functionally participate in society can be heavily influenced by the interaction between their body function and structures, activities they are involved in, and their personal and environmental factors (World Health Organization, 2001). Dyskinetic cerebral palsy is a movement disorder characterised by changes in muscle tone and posture, with a varying element of involuntary movement (Stewart & Harvey, 2018). Functional participation in activities is particularly complex for this group of people when physical access options are limited.

This paper will be presented in conjunction with Clare who has used assistive technology extensively throughout her life to enable participation in a wide range of everyday activities. Clare has dyskinetic cerebral palsy with significant motor impairment and hearing loss. She mobilises using a powered wheelchair and accesses a speech generating device for communication, computer functions and environmental control. With life goals of study, work, travel and adventurous leisure pursuits; technology has given her independence and empowerment in all aspects of life.

Along with the triumphs of successful use of assistive technology has come many hurdles and challenges for Clare. Changes in physical functioning has meant ongoing assessments from therapists, extensive equipment trials and having to learn new ways of participating in her daily activities. New processes with the introduction of the NDIS has added additional challenges.

Through Clare’s inspirational story and journey through the world of assistive technology, considerations for client centred assessment, outcome measurement and successful implementation of technology will be highlighted.
The difficulties of finding an efficient and robust language system for one and two switch scanners: Introduction to Corescanner.

Bond B

\[Liberator\]

Switch Access & Control, Eureka Room 1, November 16, 2018, 1:30 PM - 2:30 PM

According to the AAC Institute, individuals that use Augmentative & Alternative Communication (AAC) indicate that two of the most important elements of communication include the ability to get their message across as quickly as possible and the ability to produce novel sentences. These two elements of communication are difficult to achieve when using AAC and are sadly amplified when alternative access products such as switches are being used in conjunction.

This presentation will discuss a vocabulary option that helps address these issues, where the ability to create novel sentences is achievable whilst still maintaining a relatively quick vocabulary selection rate.

Corescanner is a progressive vocabulary program specifically designed for individuals with physical disabilities, who best access AAC through the use of one or two switch scanning. What makes this system a unique solution for AAC users is that it utilises a transition block feature between difficulty levels that increases a user’s access to vocabulary without losing their developed motor patterns. The system is designed for all levels and abilities, providing access to thousands of words for complete novel language construction.

The presenter will demonstrate the different levels within the system and also explain the five foundational principles that provide the basis for the system which includes; motor planning, single words, core vocabulary & frequency of use, robust vocabulary needs and early access.
The future of skills development training in the AT world

Gordon L  
1Department Of Human Services (SA)

Education & Skill Development, Eureka Room 1, November 15, 2018, 10:30 AM - 12:10 PM

Introduction/Aims

Domiciliary Equipment Service (DES) is a business unit of the Department of Human Services (DHS) in South Australia (SA), providing assistive technology (AT) to support people across the sectors of disability, ageing and health.

Poor AT selection and provision has poor outcomes for end users and funding schemes. People may be injured, abandon their AT, or may need re-assessment to modify or replace their AT. Ensuring clinicians are appropriately skilled in assessing for AT, training is a key component to increase the quality and cost effectiveness of AT programs.

Abstract

DHS has funded an AT training program, coordinated by DES, with clinicians across the state accessing it at no cost. This comprehensive, hands-on training has focused on higher risk AT areas such as manual and powered wheelchairs, complex seating, pressure management, bariatric equipment, and home modifications. Recent customer sounding research by DES has shown this training is highly regarded by the clinicians.

With the transition to the National Disability Insurance Scheme (NDIS), there are a number of people whose AT needs will remain the responsibility of state jurisdictions. SA will need to consider its responsibilities to continue AT assessment training as a quality and safeguarding measure. However, it must be argued that irrelevant of funding program, all clinicians assessing for AT should be appropriately skilled. Surely, there are opportunities for stakeholders around the country to work together and ensure that training can support better outcomes for end users, clinicians and funders alike?
The role and support needs of non-clinical staff for assistive technology service in Australia

Connor M¹, Milgate W¹, de Jonge D¹, Hughes J¹

¹Australian Catholic University, ²LifeTec Australia

AT Practice, Eureka Room 2, November 15, 2018, 10:30 AM - 12:10 PM

Aims

The impact of national disability, aged-care and health reforms and the evolution of assistive technology service provision have caused a shift in the role and scope of services expected of non-clinical staff within assistive technology services. Non-clinical staff are often at the forefront of service delivery, providing advice and guidance on less complex aspects of assistive technology and are the gatekeepers to accessing further health professional advice. As a consequence, their role can have a significant influence on a person’s assistive technology service experience. Currently, there is a lack of research examining the impact of this influential role and the training and support requirements of non-clinical staff to fulfil this role.

A mixed methods study was conducted in 2018 which explored the experiences of non-clinical staff regarding their current and perceived role in assistive technology service provision, and their support and training needs.

Findings/Results/Outcomes

Consistent with phenomenological methodology, a thematic analysis was used to analyse data gained from semi-structured interviews with the non-clinical staff employed at a dedicated assistive technology service and a focus group conducted with their supervisors.

This presentation will summarise the findings of this analysis and will provide a unique insight into the experiences of non-clinical staff in a dedicated assistive technology service. The identified areas for development and support in order to optimise the role of non-clinical staff will be discussed.
The role of Rehabilitation Engineering in Australian AT service delivery
Friesen E1, Brown I1, Hobbs D1, Morris K1, Slattery P1, Bingham R1, Contoyannis B1
1NCRE

Rehab Engineering, Eureka Room 3, November 14, 2018, 3:00 PM - 4:00 PM

Aim: To discuss the role of rehabilitation engineering in assistive technology design and service delivery, both in Australia and internationally.

Engineers Australia is the peak body for engineering in Australia. Within the EA Biomedical College, the National Committee on Rehabilitation Engineering aims to promote the work and role of professional engineering involvement in the provision of assistive technology services to Australians with disabilities, improve Government understanding of, and support for rehabilitation engineering; and establish and increase the level of rehabilitation engineering research and development projects, manufacturing industry and training in Australia.

In this panel discussion, members of the NCRE and rehabilitation engineers registered with EA will discuss the role of rehabilitation engineering in assistive technology design and service delivery, both in Australia and internationally. The panel discussion will focus on five areas:

1. What is rehabilitation engineering and how is it part of AT service delivery in Australia?

2. Involvement of rehabilitation engineering in current evidence-based service delivery, including manufacture of custom-made assistive technologies and standards development.

3. Engineering design approaches used in rehabilitation engineering, such as participatory action design, user-centred design, and universal design.


5. Overview of the Engineers Australia Chartered Status credential for members of the engineering team, and how it operates in the field of rehabilitation engineering.

Members of the panel have extensive experience in assistive technology service delivery, research, regulation, and policy development and implementation. The panel discussion will be of interest to all stakeholders involved in assistive technology provision in Australia.
The situation of assistive products in Bangladesh by comparing Priority Assistive Product List (APL) of World Health Organization (WHO)

Khan M\textsuperscript{1}, Oku H\textsuperscript{1}, Sano M\textsuperscript{1}

\textsuperscript{1}Kobe Gakuin University

International Perspectives, Eureka Room 1, November 14, 2018, 3:00 PM - 4:00 PM

In Bangladesh, 9.07% people out of total 160 million populations experience disability. This situation is almost similar to other countries. The World Health Organisation (WHO) has recently announced a Priority Assistive Product List (APL) to ensure development and distribution of assistive products for all. However, there is no official database and distribution system of assistive products in Bangladesh, which makes information on availability of assistive products from the APL unknown.

Aims:

The aim of this research was to reveal the available assistive products in Bangladesh from the APL of WHO. In Bangladesh, there is only one rehabilitation center, and that has been producing and distribution assistive products along with other 11 non-government organisations. To know the actual number of assistive products available in Bangladesh from the APL, this rehabilitation center along with others were visited and surveyed.

Findings:

Survey results revealed that of the 50 Priority Assistive Product List items, 22 assistive products are available in Bangladesh. Eighteen out of 50 APL items were found in the center - primarily consisting of Mobility (81%), Environment (80%) and Communication (25%) products. No Vision, Hearing and Cognition items were noted there. In developed countries like USA, UK and Japan, all 50 assistive products of the APL are available. The current survey results indicate that the availability of assistive products in Bangladesh is in the primitive stages. The reasons behind this and ways forward will be further explored in our next research stage.
The Switch Access Measure: a new reliable tool for assistive technology practitioners

Tilbrook A¹, Sandelance M¹, Nguyen T¹, Wright V²
¹Navita, ²Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital

Access Methods, Courtyard Room, November 15, 2018, 10:30 AM - 12:10 PM

Aim

People with severe and multiple disabilities often use switches to control their assistive technology for activities including play, recreation, communication, education, mobility, work and independence in the home environment. We developed the Switch Access Measure (known to its user as SAM) to address the lack of standardised, reliable and valid measures to evaluate users’ success in operating their prescribed switching technology.

Development and validation

SAM is an activity-based assessment that was developed through an iterative, expert-informed process to evaluate user’s switching ability on 16 skills (6 motor, 2 visual, and 8 process), providing:

- Identification of abilities, challenges and opportunities for technology improvement/intervention planning/training
- Comparison of different switching set-ups to help determine which to pursue
- Evaluation of performance changes over time with a given switch/es.

Our validation study assessed SAM’s inter-/intra-rater reliability and ease of use. Two occupational therapists with switch access assessment/intervention experience were trained by SAM developers to be study assessors. Each independently scored SAM while viewing study assessment videos of 20 children doing an individually-selected goal-based activity/ies with their switching technology. Their scores were compared with the SAM developers’ scores (reliability benchmarking). Inter- and intra-reliability were excellent and ease of use highly rated. A SAM training/certification course was developed incorporating learnings from this reliability work. The first course, delivered in Adelaide 27-28 April 2018, trained 11 occupational therapists, 5 speech pathologists, and a rehabilitation engineer/researcher.

Conclusion

SAM has strong reliability and ease of scoring, and fills a longstanding measurement gap in the field of switch access technology.
Many young adults with disabilities use assistive technology to facilitate participation in everyday activities. However, the usefulness of assistive technology is susceptible to the environment in which it is used. In this qualitative study, the researchers combined symbolic interactionism (focused on meaning making at an individual level) with a critical perspective (focused on societal change) to explore how young adults with disabilities who use assistive technology perceived and experienced societal attitudes. Twenty young adults using assistive technology completed individual interviews before and after engaging in a photovoice process. Ten of the participants then took part in a follow-up focus group. Data were analysed inductively, yielding three primary themes: (a) Seen and Treated as Different, (b) Assumptions Made, and (c) Impatience. A fourth theme emerged through focus group discussion: (d) Photos as a Means of Consciousness-raising. Findings suggest that young adults with disabilities who use assistive technology regularly encounter negative societal attitudes that hinder participation. Further actions are needed to resolve this challenging participation barrier; these actions should draw on the perspectives and creativity of young adults who use assistive technology.
Towards an Assistive Technology Practitioner Directory: an update on ARATA’s Credentialing Project

Nade L

Smart Speakers, Eureka Room 3, November 15, 2018, 10:30 AM - 12:10 PM

Aims

ARATA’s Credentialing Group have been working on strategies to empower Assistive Technology (AT) to choose Assistive Technology practitioner (ATP) services – regarding assessment, prescription and implementation - to best meet their Assistive Technology needs.

Background: The National Disability Insurance Scheme (NDIS), along with other policy reforms, endorses a person-directed procurement approach to empower consumer choice; including their assistive technology services and specific AT requirements. This insurance-style approach has transformed traditional service provision and known AT practice to a decentralised service sector encouraging greater cohort of independent service providers. Subsequently, consumers are having to navigate an evolving AT service landscape scattered with numerous sole practitioners and smaller private providers providing assistive technology assessment - prescription expertise and implementation.

Findings: The presentation provides an update on project progress. The dimensions of expertise will be discussed, the current aims and the vision for the future. An outline of a prototype national Assistive Technology Practitioner (ATP) searchable directory and database will be presented.

Conclusion: This paper presents the conceptual and project design work to date, as well as opportunities for ARATA member involvement during piloting phases. ARATA ATP database project is of interest to AT stakeholders including: sole practitioners, multidisciplinary AT services, expert AT users and support people and AT suppliers.
Trials and Tribulations; adapting service delivery for better outcomes in Alternative and Augmentative Communication

Hamilton N¹
²Yooralla

Communication, Eureka Room 1, November 16, 2018, 10:30 AM - 12:10 PM

With the introduction of the NDIS, families are looking for assistive technology (AT) options that are both successful and cost-effective. Research has shown that there is a high rate of AT abandonment due to a range of factors, including; anxiety around its use, lack of training, and lack of involvement in choosing.

ComTEC’s aim was to investigate how these factors could be addressed by adapting the service delivery model, leading to greater confidence in choosing Augmentative and Alternative Communication (AAC) systems.

The basis for this exploration came from clinical experience in a specialist AT state-wide service along with a review of current literature. Three different questionnaires were used to collect feedback on themes exploring trials of AT, training, and confidence levels in using AT. Questionnaire respondents included parents of children who use AAC, as well as therapists and clients that have used ComTEC’s advisory services and equipment library.

Initial findings reinforced the previous research and highlighted the need for longer device trials as well as greater access to training on a number of platforms, including online and face-to-face. Furthermore the level and extent of training was influential to increasing confidence levels and usage. This was demonstrated by respondents strongly agreeing that online and on-demand implementation training was useful and led to increased confidence levels in supporting their child to use AAC.
Unpacking the GATE position paper on assistive technology provision
Steel E\textsuperscript{1}
\textsuperscript{1}University of Southern Queensland

International Perspectives, Eureka Room 1, November 14, 2018, 3:00 PM - 4:00 PM

The World Health Organization’s (WHO) Global Collaboration on Assistive Technology’s (GATE) position paper on assistive technology provision was developed in association with the Global Research, Innovation and Education on Assistive Technology (GREAT) summit in Geneva (2017) and published in 2018. This presentation will present key points from the position paper on how assistive technology services can be delivered systematically to improve access to and outcomes from assistive technology. It will describe the steps involved in systematic assistive technology provision, from the first indication of need through to continued use of assistive solutions. Criteria for evaluating the quality of assistive technology provision will be presented and discussed in relation to the structures, processes and outcomes of particular programs.

Implementing the recommendations from the GATE position paper requires change at the level or individuals, organisations and systems, including re-orientation of systems to a rights-based approach, and the establishment of outcomes measurement as a standard practice. The implications for tertiary education and vocational training, as well as continuing professional development, and challenges with the current Australian policy and funding structures will be discussed.
Use of 3D scanning technology to determine access for people using powered mobility devices on buses.

Unsworth C¹, Chua J¹, Naweed A¹, Gudimetla P¹, Nguyen T², Barnes D²

¹Central Queensland University, ²Monash University

Transport and Travel, Eureka Room 1, November 14, 2018, 1:00 PM - 2:20 PM

**Background:** While public transport is designed to move people efficiently and affordably in their local region, many people using powered mobility devices have access difficulties, particularly when using buses. People using powered mobility aids, professionals prescribing these devices and public transport providers all require accurate information concerning which devices will and will not be able to access (enter, manoeuver and exit) buses.

**Aim:** To demonstrate how existing 3D technologies and software can be applied to enable people using mobility aids to determine the fit of powered mobility devices on buses, and to present the fit or misfit for a range of mobility devices.

**Methods:** The 3D scanning technologies and prototype software used will be described, and the simulation process that determined the compatibility of the mobility aids for access on buses will be presented.

**Findings:** This paper presents a novel approach to scanning buses and mobility aids in 3D. We have determined the dimensions of powered mobility devices that indicate if they will be able to fit a bus, and will share these. We have identified a range of current powered wheelchairs and scooters available in Australia and provide data on their 3D fit on on buses.

**Conclusion:** This paper demonstrates how gathering and using 3D data can assist people using mobility devices, professionals who prescribe them and transport operators to optimise transport network accessibility for all community members.
Use of Assistive Devices for Persons with Intellectual Disability to Travel Independently

Khoo S1
2Sg Enable Limited

Transport and Travel, Eureka Room 1, November 14, 2018, 1:00 PM - 2:20 PM

Aims

SG Enable commissioned a 6-month project in 2017, conducted in the form of a pilot trial to test:

- The efficacy of the use of assistive devices to train and aid persons with intellectual disability to travel independently; and
- The hypothesis that through the use of assistive devices, caregivers could have greater ease of mind in allowing their children with intellectual disability to travel on their own.

Method

Thirty students with intellectual disability and very little or zero independent travel experience participated in the pilot trial, together with their caregivers. Two types of assistive devices were used in the trial:

- Interactive Mirror (iMirror) – A device that uses virtual reality to simulate local environments such as road crossings and public transport system (buses and trains). Using gesture-based movements, students could learn basic travelling skills such as road safety and taking of the public transport through interactive simulations.
- Smart Watch / Pendant – These devices could receive and make calls by pressing a pre-set button. Caregivers could track and monitor the location of these devices using an accompanying application on their mobile phones.

The pilot trial comprised 3 stages:

- Stage 1 – Pre-travel training using the iMirror. The simulated training was conducted in schools, followed by field training.
- Stage 2 – Fixed Route Training (field training) where the participants were trained by caregivers to use the public transport to travel from home to the Enabling Village. At this stage, caregivers also trained the participants to use the smart devices.
- Stage 3 – Trial and Evaluation where the student participants travel from home to the designated Enabling Village on their own using the public transport and wearing the smart devices. Different scenarios were designed to “test” the participants on the use of the smart devices.

Throughout the pilot trial, field observations were recorded and interviews were conducted with teachers and caregivers.

Findings

The assistive devices used in this pilot trial were assessed to be effective in training and assisting persons with intellectual disability to travel independently using the public transport. With the use of such devices, caregivers are more willing to allow their child to travel on their own.
Using social return on investment analysis to value the social impact of modified vehicles to people with disability.


1School of Health Sciences, University Of South Australia, 2College of Nursing and Health Sciences, Flinders University, 3Institute for Choice, Business School, University of South Australia

Transport and Travel, Eureka Room 1, November 14, 2018, 1:00 PM - 2:20 PM

“I drive myself every day...I don’t know what I would do without my car.” Using social return on investment analysis to value the social impact of modified vehicles to people with disability.

Aims

People with acquired disabilities often have return to driving as a rehabilitation goal and, given the technological advances in vehicle modifications (VMs), people with lifelong disabilities have greater opportunity to drive for the first time. Returning to driving has been associated with a range of positive social, economic and health outcomes. Yet to date there has been no economic evaluation of VMs, in Australia or internationally. This study aimed to identify the personal, community and social impact of VMs using social return on investment analysis (SROI). SROI analysis is an innovative approach that aims to place values on social outcomes to produce a ratio of total spend to total impact e.g. a ratio of 3:1 indicates that $3 of value was generated for every $1 spent.

Findings

We present our analytical findings including data sources, outcomes identified, how evaluations were determined, and what other factors were considered in arriving at our SROI ratio. Given the vast spectrum of VMs that can be tailored to meet the needs of people with disability, from simple wing mirrors and spinner knobs through to complex modifications (e.g. Space Drive, Paravan), we conducted three separate calculations that reflect low, moderate and high level complexity and cost. In the post-NDIS environment, where it is expected that the NDIS will become a major provider of VMs moving forward, this study shows the valuable potential of SROI analysis in demonstrating value for money for a wide range of stakeholders including funding bodies, policy makers, practitioners, and disability advocacy groups.
Using technology in housing: current opportunities and considerations in Australia

Callaway L\textsuperscript{1,2}, Tregloan K\textsuperscript{3}, Carter B\textsuperscript{4}, Tran Q\textsuperscript{5}, Bredin J\textsuperscript{6}

\textsuperscript{1}Occupational Therapy Department, Monash University, \textsuperscript{2}Neuroskills Pty Ltd, \textsuperscript{3}University of Melbourne, \textsuperscript{4}Residential Independence Pty Ltd, Transport Accident Commission, \textsuperscript{5}Summer Housing, \textsuperscript{6}Calling the Brain's Bluff

Housing (panel session), Eureka Room 3, November 14, 2018, 1:00 PM - 1:40 PM

This panel presentation will bring together assistive technology (AT) users and peak body, government, and academic representatives. Panel members are experienced in the development, implementation, use and/or evaluation of assistive and mainstream technologies delivered in supported housing environments. The panel will discuss AT users’ perspectives, current policy and practice, and opportunities and challenges relating to AT design, implementation, monitoring and review in Australia.

The panel has four key aims:

- Demonstrate current innovations and experiences of national AT practice in accessible and adaptable housing design;
- Detail evaluation approaches in relation to the use of technology in housing;
- Outline current opportunities and areas of challenge for the delivery of integrated technologies in accessible housing;
- Provide an overview of current AT policy, funding and service development contexts, in relation to housing, for state-based injury insurance schemes and the National Disability Insurance Scheme.

A range of practical resources will be presented and discussed, including design briefs, guides and evaluation frameworks and reports. There will also be opportunity for questions and discussion from the audience.
Virtual, augmented and mixed reality; an exciting rehabilitation technique, a fad, or something in between?

McDonald R¹, Ameliorate J¹, Merolli M¹, Mackelprang J¹

¹Swinburne University Of Technology

Virtual, Augmented and Mixed Reality, Courtyard Room, November 14, 2018, 3:00 PM - 4:00 PM

Aims:
The aim of this skills workshop is to demystify reality based technologies such as Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR), and to look at emerging evidence for use of reality based technologies as enablers and barriers as well as potential and risk for different groups of Assistive Technology Users.

Specific learning Objectives:

- To discuss and understand the difference between Virtual, Augmented and Mixed reality, and to give a rundown on how reality based technologies are developed.
- To explore the potential of reality based technologies in enablement of participation and rehabilitation
- To review the evidence of VR vs AR vs MR for enablement of participation and rehabilitation

Outcomes:

Although virtual reality as a concept has existed for decades, it has been largely confined to large industrial design projects and gaming. However, recent developments in terms of cost of the equipment as well as accessible design mean that reality based experiences are increasingly accessible to the mainstream market. As with any technology, co-design with the user, the developer and the professionals involved in providing and supporting the person with their technology is the best way to ensure that the user can reach their assistive technology goals. This skills workshop will walk the participants through different aspects of reality based technologies, including evaluating equipment such as headsets. Evidence from where VR/AR/MR has been used as a therapeutic tool will be reviewed and discussed, and the workshop will finish with discussion on pathways forward.
We're not processing tupperware orders - evolution of a high quality best practice assistive technology service delivery model

Burton J¹

¹State-wide Equipment Program, ²Ballarat Health Services

AT Practice, Eureka Room 2, November 15, 2018, 10:30 AM - 12:10 PM

Aims

To discuss the critical elements of an evidence based, best practice service delivery model for the provision of assistive technology, that meets the needs of all stakeholders.

Findings/Results/Outcomes

The State-wide Equipment Program (SWEP) in Victoria has developed a consumer centric service delivery model which combines several essential elements within a governance framework that considers systems and infrastructure, prescriber accountability and support, and organisational agility in a rapidly changing policy and funding environment. Combined, these ensure the provision of an efficient, integrated and accountable service to provide positive outcomes for consumers and meet the expectations of funding bodies.

Abstract

The primary purpose of SWEP is to improve consumer outcomes by ensuring timely access to assistive technology, enhancing or maintaining their safety and independence, facilitating community participation, and supporting families and carers in their role.

The SWEP Service Delivery Model © is a unique business model designed to respond to the needs of funding bodies and consumers of assistive technology. The model encompasses an integrated approach from assessment through to supply to provide assurance that equipment provided to consumers is best fit for purpose and demonstrates best value for money. Elements of the SWEP model includes strategic procurement, an innovative repairs and reissue service, communications, prescriber registration and credentialing, clinical advisor panels, standardised and integrated documentation, priority of access and demand management strategies and other continuous improvement initiatives.

Most items provided through SWEP could be directly purchased by consumers through existing retail pathways, however SWEP provides an important value add through an integrated, accountable and risk managed service. While best value is gained leveraging the intangibles integral to this model – such as expert knowledge, experience, established partnerships and networks, sector credibility, expertise in system navigation, business processes, infrastructure, governance and risk management frameworks, aptitude for innovation, collaboration, and adaptability, SWEP now also offers individual elements for stakeholders to leverage from. This approach considers how consumers can exercise choice and control considering parameters such as safety, functionality and durability, within the context of the funding body’s requirements for dignity of personal risk for their consumers.

This agile and innovative approach will be explored in more detail in the presentation.
What technology developers and prescribers need to know: Perspectives of people living with dementia and their care partners

Liddle J¹, Worthy P¹, Frost D¹, Wiles J¹, Florence Project Lived Experience Expert Reference Group¹

¹Florence Project, School of Information Technology and Electrical Engineering, The University Of Queensland

Co-Design & User Experience, Eureka Room 2, November 16, 2018, 1:30 PM - 2:30 PM

Background/aim: While the development of technology aiming to help people living with dementia and their care partners is rapidly growing, there is concern about the quality and suitability of this technology. There is a lack of confidence in health professionals about supporting technology use. As part of a project co-developing technology with people living with dementia, a qualitative study was undertaken. Participants were interviewed about their experiences with technology and perspectives on currently available options, and what is needed. Eight people living with dementia and 11 care partners participated in audio-recorded, semi-structured interviews. The transcribed interviews were analysed using interpretive description. Preliminary results follow.

Findings: Participants described a variety of experiences with technology, ranging from reluctant, necessary use to developing their own innovative technology-based strategies. The use of technology reflected the person’s identity, life history and recent experiences. Technology was perceived as having a role in supporting connection, maintaining control and facilitating participation, fun, learning, memory and safety. Participants emphasised that its introduction should use existing skills but not bring extra demands. Properties of currently available technology that made it difficult or unacceptable to use were noted.

Overall, there was great hope for technology, and participants identified personalised wishlists of technology that would assist them. Concern about technologies were reported in terms of usability, ethics and the potential for it to be used to replace supporting people, rather than facilitate connection. Participants expressed the particular need for personalised, easy to use and transparent technologies, reflecting people’s interests, roles and values.
When More is Better. Multiple Access Options for Computers and Devices.

Solomon S, Muscat K

Zyteq

Access Methods, Courtyard Room, November 15, 2018, 10:30 AM - 12:10 PM

When considering all the access options available for devices and computers it often takes creativity to combine access methods, to find the most efficient solution. Here we are considering alternatives to the standard keyboard and mouse, and touchscreen. There are two main scenarios where multiple access methods are needed. First, access methods can be combined for increased efficiency. Second, one individual may need different access options depending on their positioning, for example one setup for sitting at a desk and a different setup for lying in bed. In this session we will explore case stories to demonstrate scenarios where multiple access methods are indicated, and provide information on the more useful combinations.

When considering the access methods available there are a several combinations that work well together. Switch access can be slow when used with row/column scanning, but using a switch to make a selection complements head-tracking mouse control and efficiency can be achieved. Voice control for text entry can be complemented with eye gaze for mouse control. Eye Gaze selection speed can be increased using a switch to select rather than waiting for the dwell time. This session is relevant to Assistive Technology practitioners who wish to go beyond the boundaries of what the technology appears to offer.
Windows to the World.

Personal and professional journeys of creative, problem-solving: opening doors to endless opportunities to explore the world.

Clark D¹, Tilbrook A²
¹Nil, ²Novitatech

Customised AT & 3D Modelling, Courtyard Room, November 16, 2018, 1:30 PM - 2:30 PM

I have always had a physical disability, led an active life and worked professionally. Due to deterioration of my disability I now need to spend most of my time in bed. The problem I faced was how to maintain my independence, safety, integrity, autonomy, and contact with the outside world, while living in one room only using my mouth.

Using a Samsung tablet, a mouth stylus, many remote controls and a smart phone that often fell on my head, life was getting risky.

I now use a Tellus 5 Windows tablet on an over bed stand, a range of software including Dragon Naturally Speaking and Grid 3 with a Quha Zono mouse on my glasses. We combined these with Z wave environmental controls and Amazon Echo integrated with other mainstream smart home devices. I can again control my home environment, explore the world, volunteer, connect and contribute to the community.

From personal and professional perspectives, the aim is to show how modern assistive technology changed my life in 18 months and how the “process” was integral to success. The prescribing Occupational Therapist and I will present via a pre-recorded presentation created using the technology. Topics covered:

- Referral, assessment, creating a vision
- Forming partnerships
- Trial and error
- Problem-solving interstate and overseas
- learning to fly
- lessons learnt

We will also describe the social and economic benefits/outcomes of assistive technology for individuals and governments. It is hoped that the presentation will assist other assistive technology users and professionals.