

TechnoTalk

The TASC Newsletter



Volume 18

Issue 4

July 2009



Editorial

Well winter may be well and truly here, but a ray of sunshine has arrived in the return of Rachelle Baldock (nee Woods), Occupational Therapist, to the TASC Consultants technology team. Rachelle has returned after having children and is a very experienced and valuable addition to our team. Rachelle is looking forward to getting to know all the new technology that has appeared in the past few years, and this includes the exciting developments in eye tracking technology.

Alana Bain, Speech Pathologist, discusses some of the considerations for eye tracking systems, including the importance of planning the set-up and design of the communication software to optimise eye gaze access for users, and discusses some recent research. A variety of eye tracking systems are now available from most specialist technology suppliers, and as with any complex technology, a comprehensive assessment with technology specialists is recommended, and also trial of as many systems as possible to determine the most appropriate system for the user.

Debbie Davis also helps to demystify some typical seating terminology for you.

Happy Reading,

Liza

News...

Cerebral Palsy Awareness Week 2 - 9 August

The theme for this year is:



People with cerebral palsy are encouraged to share their story of how they are making a difference in the world.

From 27 July share a story, photo or video with Australia. The Woman's Day will feature the most inspiring story.

See website for more details:

www.youbethedifference.com.au

Inside

Editorial.....	1
News: CP Awareness Week.....	1
Main Story: Looking To Communicate.....	2
Article: What Body Part?.....	4



We welcome any feedback, good or bad, that you may have on our service. Please feel free to contact us by phone on 02 9975 8469, email tasc@tascnsw.org.au or by writing to The Spastic Centre PO Box 184 Brookvale NSW 2100

TechnoTalk Newsletter is free and available from www.thespasticcentre.com.au/news/technotalk/

Main Story:

Looking To Communicate

by Alana Bain, Speech Pathologist

In the past couple of years, there has been the emergence of eye control systems in Australia (also known as eye tracking or eye gaze systems). Eye tracking can be used as an alternate access method for computer control and communication. With the development of integrated communication systems, eye tracking is now an additional access method which is offered with some speech generating communication devices.

Eye tracking systems track the movement of the user's eyes to targets (such as letters or symbols) on the screen. Targets can be selected using either a dwell (keeping your gaze on the target cell) or via a click (through a switch activated by the body). Hansen et al (2006) found that click confirmation is faster than using a dwell selection. However, the selection method chosen will largely depend on the skills and preference of the user.

The DynaVox Vmax and the Liberator-14 both have eye tracking systems which can be attached to the device. This means that the user can access via eye gaze the InterAACT and Gateways page sets on the DynaVox Vmax and the Minspeak and WordCore pages sets on the Liberator-14. Alternatively, communication software such as The Grid 2, VS Communicator and Speaking Dynamically Pro can be loaded onto existing eye tracking systems such as the EyeGaze Edge, ERICA, My Tobii P10 and the Quick Glance 3 (see supplier websites listed for more information).



ERICA
Picture sourced from www.technability.com.au



Liberator with EcoPoint
Picture sourced from www.liberator.net.au

Hansen et al (2006, p35) believes that "While it's unlikely that a gaze controlled communication system will ever achieve communication rates comparable to unimpeded speech... the long term goal is to achieve an input rate that is comparable to the QWERTY keyboard for typing, as this is usually sufficient to partake in on-line conversations (chatting)."

This means that the page design is a key consideration when setting up a user's eye tracking system. The size of cells that can be accurately "gazed at" must be considered, as well as the position of key cells so that they are easily within the eye gaze frame. For literate users, features such as word prediction and word completion may help with typing efficiency.

Johansen and Hansen (2006, p125) believe that it is better to "strive for simplicity and clarity in the interaction and user interface, rather than opting for including every possible time-saving feature in the system". In their study of text-entry models, they found that a simple 8-cell page set was a more efficient means of accessing the alphabet than a full alphabet keyboard.

That means, making the cells in a grid larger could be the difference between a user being able to access a target in two or three hits rather than not being able to access it at all. The study also showed that when compared with scanning, they felt having larger cells involving two or three hits to select a target may be less tiring, quicker and more efficient for some users than scanning through a larger number of cells.



Many of the communication software programs come with pre-programmed page sets, and there are now some pages which are purpose-designed for eye tracking users. For example, the Navigator page set is available on the DynaVox Vmax, which is simpler and the cells are larger than other page sets. Pages are based on the most common core words used in daily communication. There are also pages which can be used to teach eye gaze skills and improve accuracy.

Aside from page design, there are many other important factors that need to be considered when looking at eye tracking systems. These include:

- **Positioning:** The user needs to be approximately two feet away from the device and the device will need to be positioned or mounted so that their eyes are within the camera's range – this means that the device is positioned quite high. For powered wheelchair users, the placement of the device may obstruct their vision and would need to be moved before they would be able to drive. Many of these systems may not be suitable to mount to a manual wheelchair due to their weight and positioning requirements.
- **Calibration:** It is recommended that the user is able to independently calibrate the eye tracking device.
- **Portability:** Being able to attach the eye tracking system to their speech generating device, makes the device more portable.
- **Environment:** The cameras in eye tracking systems work by 'reading' corneal reflections. This means that if there is a direct light source behind the user, it is more difficult for the camera to 'read' the user's eye gaze. Thus an eye tracking system may be difficult to use outside.



Screenshot of the Navigator page set on the DynaVox Vmax
Picture sourced from www.spectronics.com.au

With the above factors in mind, it is important that the practicalities of how the eye tracking system would work for the user need to be carefully thought out. A comprehensive assessment and trial with an occupational therapist, speech pathologist and assistive technology specialist is recommended to ensure that the most effective and efficient access method and communication system is chosen for the user.

References:

COGAIN Association: Communication by Gaze Interaction website www.cogain.org

Hansen, J.P., Lund, H., Aoki, H. and Itoh, K (2006). Gaze Communication Systems for People with ALS. Presented in the ALS Workshop, in conjunction with the 17th International Symposium on ALS/MND, Yokohama, Japan

Johansen, A.S. and Hansen, J.P. (2006). Augmentative and Alternative Communication: The future of text on the move. Universal Access in the Information Society (UAIS), 5, 2

Suppliers of Eye Tracking Systems in Australia:

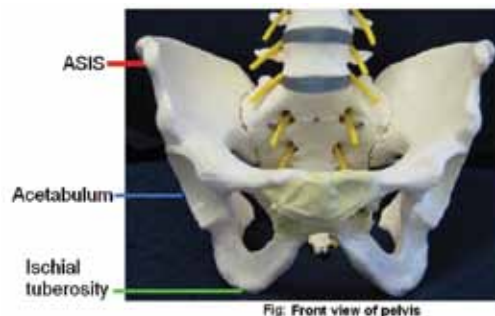
- | | |
|--|--|
| Liberator (ECOpaint) | www.liberator.net.au |
| NovitaTech (Eyegaze Edge) | www.novitatech.org.au |
| Spectronics (DynaVox EyeMax, MyTobii, TobiiCEye) | www.spectronics.com.au |
| Technability (ERICA) | www.technability.com.au |
| Technical Solutions (Quick Glance 3) | www.tecsol.com.au |
| Zyteq (Intelligaze IG-30) | www.zyteq.com.au |

Technically Speaking!

What Body Part Are You Trying To Locate?

by Debbie Davis, Seating Consultant/Physiotherapist

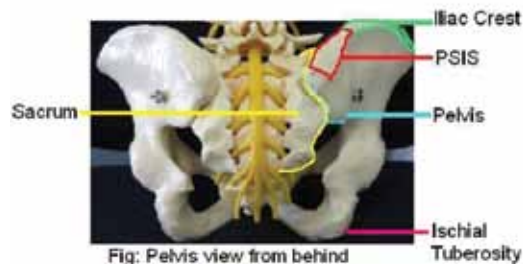
During an assessment for seating equipment, a therapist often spends time locating landmarks on the client's body to assist with positioning them suitably. These landmarks are sometimes referred to as bony prominences. A bony prominence is simply the protruding part of the bone that we can feel through the skin. Specific bony prominences can be used to show us where the bones are located and in what direction they are facing. As therapists, we often get carried away and refer to bony landmarks in their abbreviated form or slang. This guide may help to demystify common landmarks that we are attempting to locate:



ASIS: “Anterior Superior Iliac Spine”, i.e. the bony prominence at the front of the pelvis. It helps to determine the position of the pelvis along with the PSIS.

PSIS: “Posterior Superior Iliac Spine”, i.e. the bony prominence located at the back of the pelvis near the sacrum. It helps to determine the position of the pelvis along with the ASIS.

Acetabulum: The socket that the thigh bone connects to, forming the hip joint.



ITs: “Ischial Tuberosity”. Often referred to as the ‘sit bones’. They are the bony protrusions located on the bottom of your pelvis that you can feel if you sit on your hands. It is often an area that is at increased risk of pressure areas occurring due to the nature of their pointy structure.

Occiput/Occipital Region: The section of the skull that is located at the back of the head near the neck. It is helpful to identify this region to be able to support the head in a functional position when fitting a headrest.