

Assessment and Set Up for Eye Gaze Device Use

Prior to introducing an eye gaze device it is a good idea to do an assessment of the student's current skills, consider all access methods and set student goals. This could be done using the framework mentioned in *Unlocking Abilities: Introduction to Developing Touchscreen, Switching and Eye Gaze Skills*.

Below are some tools that could be useful in assessing the student's skills in relation to using an eye gaze device;

1. **Unlocking Abilities: Eye Gaze Monitoring Sheet**

Could be used as a screening tool to see where the student's skills are currently and what skills to target in intervention.

2. **ACETS Eye Gaze Technology Screening Checklist. *Available online**

Can be used to screen for a student's suitability for trial of an eye gaze device and also indicate what accommodations may be needed for the student to access an eye gaze device.

3. **Inclusive Technology, Eye Gaze in the Classroom, Eye Gaze Assessment Checklist,**

<http://www.inclusive.co.uk/Lib/Doc/catalogues/eye-gaze-booklet-2015.pdf>

Recording tool for when trialling eye gaze.

Considerations for Use of Eye Gaze Devices (Beckers, Krack, 2013)



Unlocking Abilities: Developing touchscreen, switch and eye gaze skills for learning and beyond
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Considerations for Suitability of Eye Gaze	Possible Accommodations
Eye health/visual skills	
<ul style="list-style-type: none"> Does the student have any eye health conditions that may impact on vision or eye movement (smooth movement, fixing gaze)? 	Larger cells Font size Colour Layout Length of dwell required Calibrating for one eye only
Visual attention and memory	
<ul style="list-style-type: none"> Does the student have any difficulties with visual attention or memory? 	Provide visual or auditory feedback Decrease environmental distractions Provide motivating activities
Positioning	
<ul style="list-style-type: none"> Can the student maintain a stable head position? Does the student require frequent changes in position throughout the day that could impact on the use of eye gaze?; e.g. due to pressure care needs or respiratory needs Does the student require positioning in tilt or recline? 	Mounting options to position the device appropriately Adjustments to seating and headrests
General Health	
<ul style="list-style-type: none"> Does the student fatigue easily? Does the student's health fluctuate impacting on function? 	Short sessions Incorporating a 'pause' or 'rest' area on the screen Energy conservation strategies to ensure most important tasks can be completed Using multiple access methods for different tasks



Environment	
<ul style="list-style-type: none"> • Are carers available to assist with positioning, use and troubleshooting of eye gaze? • Are there multiple carers that will require training? • Is the caregiver comfortable with using technology? • What physical environments will the eye gaze need to be used in? Will lighting impact on use? 	<p>Significant education and support for carer to assist with set up, use and troubleshooting with the device</p> <p>A trial in all environments the device would be used</p>
Trials	
<ul style="list-style-type: none"> • Is there appropriate support to organise a significant trial? 	<p>ILC WA hire eye gaze devices and computers for 4 week trials.</p> <p>Short term hire (2-4 weeks) available through suppliers.</p>
Funding	
<ul style="list-style-type: none"> • Are there possible funding options for eye gaze available? 	<p>Funding options in WA include;</p> <ul style="list-style-type: none"> - CAEP - WA NDIS or NDIS - Fundraising - Equipment grants



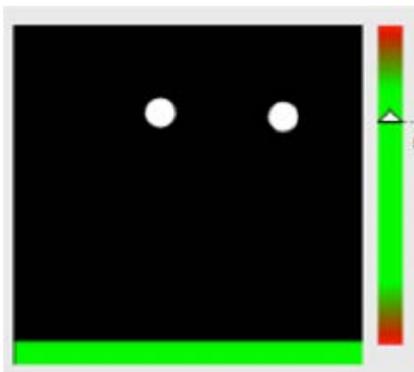
Set Up

Positioning



Positioning for eye gaze is extremely important. The goal when positioning for eye gaze use is to achieve a stable eye image for the eye gaze device to track. The eye gaze system should remain parallel with the students head. This means if the student is reclined the eye gaze should be positioned above them. A certain distance needs to be maintained between the user and the device. Each device will have its own recommendations, however the distance required is usually between 45cm and 85cm.

The eye gaze system provides visual feedback on positioning. Position should be checked each time the device is set up for use. With appropriate mounting systems, eye gaze devices can be positioned for use in chairs, beds or on the floor.



When assisting a student to use eye gaze, position yourself behind or next to the screen. This will help draw the student's attention and ensure that your eyes don't interfere with control of the eye gaze device.

Calibration

Calibration is the process in which the eye tracker camera measures characteristics of the eyes in order to accurately track eye gaze direction. This process involves the student being asked to look at specific targets on the screen to collect this information. This needs to be done for each student using the eye tracker. These settings can then be saved as their profile for future use. The calibration process for each device will be slightly different. A successful calibration will increase the accuracy of the eye gaze device.

Calibration can be made easier for students by reducing the number of targets they have to look at or changing the animation of the targets; e.g. colours, animals, faces.

It is not necessary to achieve a successful calibration to start the experimental learning stage using eye gaze (sensory games and searching for large targets). The experimental learning games can be used to teach the skills needed to achieve a calibration at a later time. A student can initially use your calibration to start experimenting with eye gaze.



Eye Gaze Settings

There are a range of settings in eye gaze software. These may need to be adjusted to make access easier for the student. Some useful ones include;

- **Windows Control** – This enables a student to use eye gaze to operate all aspects of a computer, including mainstream software. Windows control offers two options for operation;
 1. **Gaze selection** – First select the task you want to perform; e.g. double click. Then look at the desired icon to complete the task.
 2. **Mouse emulation** – Use your eye gaze to control the mouse pointer. Then dwell (maintain gaze) to perform your task.
(Windows Control - Gaze Enabled Computer Access, n.d.)
- **Selection method** – In order to select items on the device, the student can use a blink, hold their gaze (dwell) or access a switch to make their selection. The most common method of selection is dwell.
- **Dwell time** – The dwell time is the time required to maintain gaze at an item on the screen before it is selected. This can be adjusted to a length of time that minimises accidentally selections but enables the student to make their selections as quickly as possible.
- Certain software enables you to create a ‘pause’ or ‘rest’ area of the screen. The student can look to this area of the screen to take a rest.

References

Beckers, K., Krack, N. (2013), CATT-22: Eye-gaze technology screening tool to guide clinical reasoning, Alberta Health Services.

Windows Control - Gaze Enabled Computer Access. Retrieved October 7, 2016 from www.tobiidynavox.com



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