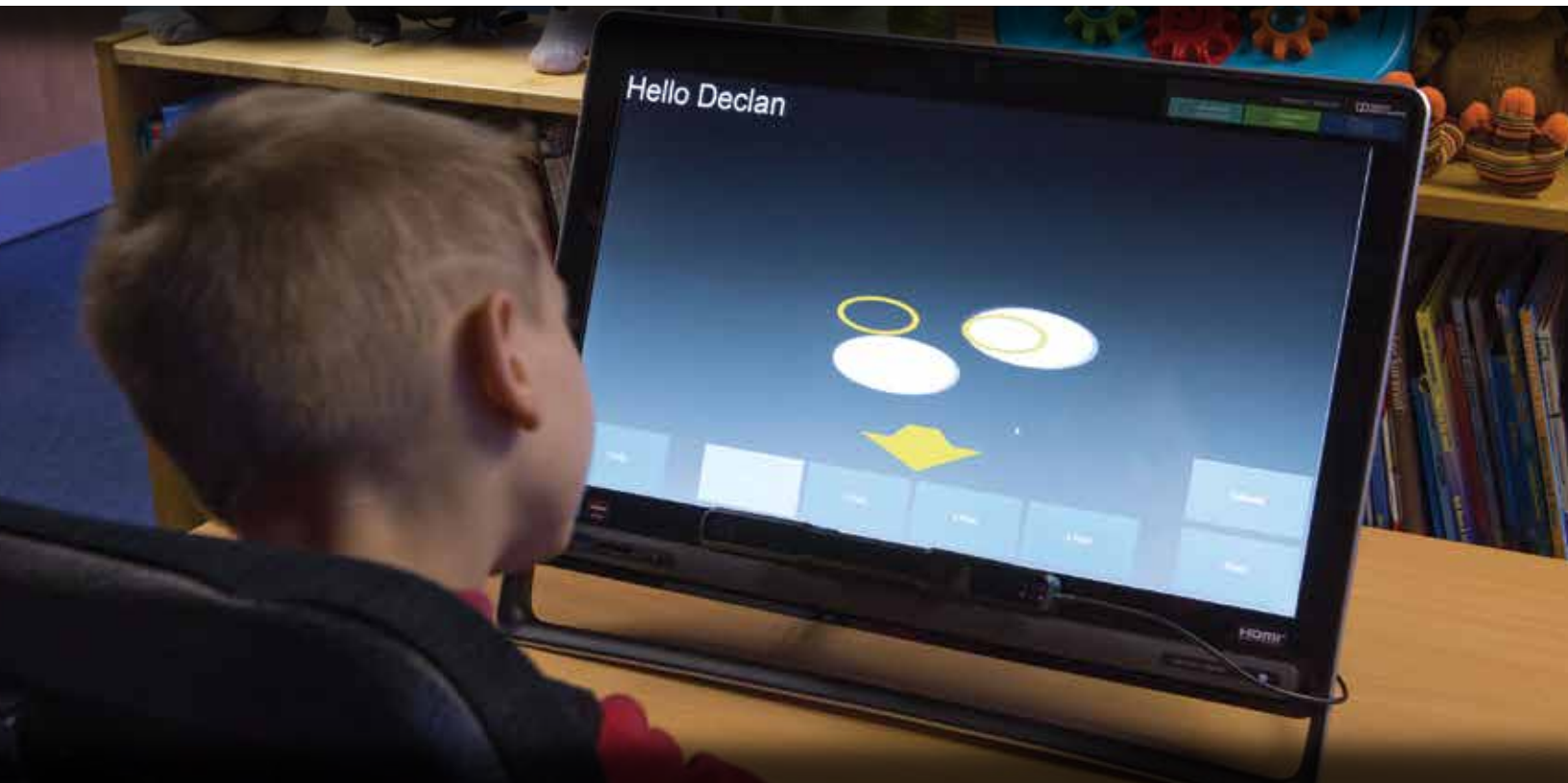




# Your Essential Guide to Eye Gaze in the Classroom



Assess | Include | Engage | Empower

**HelpKidzLearn**

# What is so different about eye gaze?

Eye gaze technology is perhaps the most exciting, innovative and important piece of assistive technology to hit the special needs classroom in decades.



In one way, eye gaze should be seen as just another potential access method for those with physical disabilities. In practice, we are seeing users of other access devices, particularly switch users, generally finding eye gaze access quicker, easier, less fatiguing (more so with practice) and a lot less restrictive.

## A shift from switches to eye gaze

This is particularly important for AAC users, where speed and flexibility are important factors in communication. We have seen a huge shift to individuals using eye gaze to access communication software that once used switch access.

With a massive drop in the price of eye gaze technology in recent years, we are beginning to see special schools and services around the globe adopt eye gaze devices to complement their fully inclusive, accessible classrooms and resource kits.

We are starting to see schools use eye gaze more creatively, and use it with a range of their favorite software and websites, not just with specialist eye gaze titles.

However, eye gaze does differ from other access devices - it can be used as an OUTPUT device and used to control, but we can also, with the right software, use it to gain insight into what is INPUT, i.e. the information the student is processing visually.

## Observe what our students see

Eye gaze technology has been used in this way for many years in the research field, but it is only now we are able to use this technology in the classroom to give teachers and therapists objective and functional feedback and analysis on students' looking behaviours.

With the right tools we can start to observe what our students see, attend to and track on screen; what they notice and don't notice, what they prefer to look at and what sense they make of what they see.

These are fundamental skills that most of us have not had the tools to assess or look at in detail before now. Such understanding of our most complex students could lead to changes in our teaching practice and open up wider opportunities for our students to interact and engage.

## Assess

Many students with complex physical and learning needs also have additional visual difficulties that can remain undiagnosed or unconsidered during their years in education. Eye gaze technology can now give us the ability to objectively observe what a student can attend to and notice on screen.

What color, size and type of image can they detect? Can they track moving objects? What are their eye movement patterns like? Do they scan the choices on screen? Can they compare and discriminate between images?

We are also interested in what images or parts of images students prefer to look at given choice, where they look in response to questions or prompts. Eye gaze technology can help us objectively record and review where a student looks to gain insight into their thinking process.



All the titles in the Inclusive Eye Gaze Learning Curve include powerful, but easy to use Analysis tools.

*"The analysis tools are my personal favorite aspect of the software. They are easy to understand and are great for sharing progress with parents. I particularly liked the heat maps and would find these useful for assessment of eye tracking. It also helped me to see what the students found reinforcing which is very important to motivate communication."*

**Karen Carmody, Speech and Language Therapist**

## Include

The ultimate aim with any student using alternative access is to enable the use of the same resources and software as their peers. Switch software, though quite expansive, will remain limited, with the range and potential of mouse and touch accessible software far surpassing it. Eye gaze devices, such as myGaze with EyeMouse Play have been specially designed to easily emulate mouse access, thus widening the range of software titles available to the student using eye gaze technology.



*Katie just has to look at the screen to play the next verse of the song.*

Although, as with any access method, some practice is needed to use eye gaze with control and accuracy, there is often not the same time investment needed in learning pure access skills compared to other methods. Students can jump quickly to using the technology to achieve educational goals.

Whether the student is at the level of learning cause and effect or beginning to make choices, teachers and therapists now have the ability to let eye gaze students access their favorite classroom software and join in with lessons at an appropriate level.

*"We use it with SLD and PMLD students and pupils with visual difficulties – to help develop vision and visual awareness. We used it across the school – pre-school, primary, secondary and also 16+."*

**Iveta Power, ICT Coordinator, Chailey Heritage**

## Engage

Some students with complex needs can appear to be uninterested in using technology or looking at screens. This could be for a variety of reasons; unrewarding, effortful or frustrating use of technology in the past, the content is not interesting or meaningful or perhaps they are at an early stage of interaction. The first place to start is fun!

Providing a stimulating environment may be one answer. Some schools are starting to include eye gaze technology in their sensory environments, controlling interactive screens and floors with just a look.

Remember most individuals need frequent practice and appropriate support to develop the skills needed to use formal communication or recording packages. Providing opportunities to play a wide range of different games and fun activities will help refine access skills and encourage students to want more. Get the student motivated then learning will follow.



*Declan playing Eye Can Fly*

*"This is a chap who has sat in his chair since he was 19 with very little to occupy himself with. This game has changed not only his life in some small way but also his parents' lives because they are seeing him playing an activity that looks like a similar game that their grandkids play on the Wii. I personally find this title to be one of the most exciting to come out in years."*

**Sean Carroll – IT/AT Consultant.  
Feedback – Eye Can Fly**

## Empower

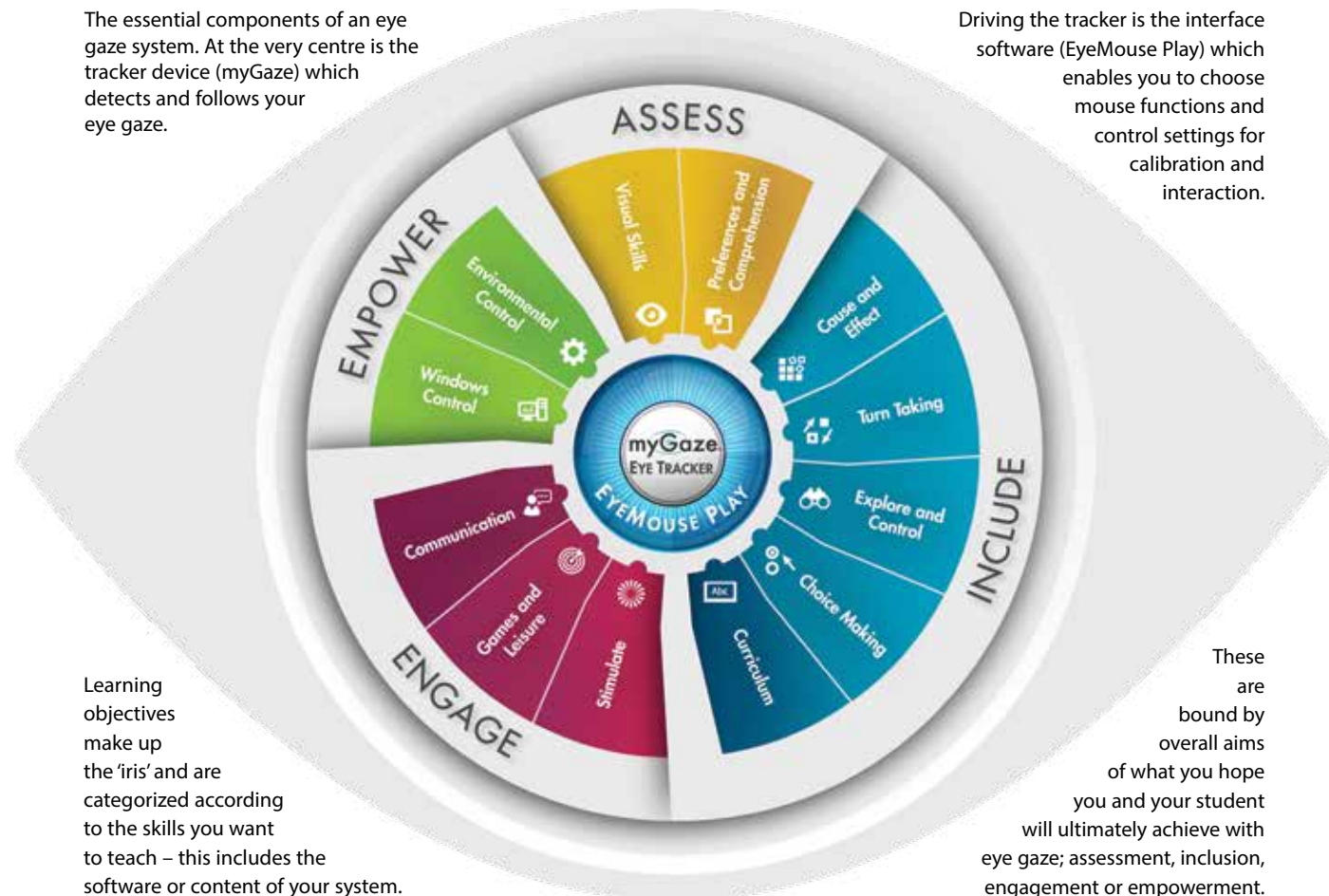
Moving on from early interaction skills, eye gaze devices have the capacity to give you full PC access to really empower your student. Launch and control standard applications such as Word, surf the Internet, communicate by email, Facebook or Skype, even control your environment, the possibilities are endless.



# The myGaze Learning Wheel

The essential components of an eye gaze system. At the very centre is the tracker device (myGaze) which detects and follows your eye gaze.

Driving the tracker is the interface software (EyeMouse Play) which enables you to choose mouse functions and control settings for calibration and interaction.



Learning objectives make up the 'iris' and are categorized according to the skills you want to teach – this includes the software or content of your system.

These are bound by overall aims of what you hope you and your student will ultimately achieve with eye gaze; assessment, inclusion, engagement or empowerment.

## Factors to consider when choosing an eye gaze system

### 1. Aims

Have a clear idea of your ultimate aim for the student using eye gaze. Is it to assess, include, engage or empower the student? Students may have more than one aim e.g. you may want to initially assess a student's visual skills and also include them in using simple cause and effect software or you might want to engage a user who has 'switched off' and empower them to control their own environment. Choose software that provides analysis tools to allow you to make baseline and ongoing assessments of the student's skills and progress so that aims and objectives can be referenced and adjusted accordingly.













### 2. Learning Stage

Identify your teaching objectives and the stage of learning your student is at. Like any other access method, users will need some time and practice in developing their accuracy and control of eye gaze. Some students will quickly work through all the stages of learning to become competent at eye gaze, while others will need longer and specific resources suited to their learning level. The table above gives you guidance in how specialist eye gaze software can be categorized into learning stages to meet different teaching objectives. Check out "How to use myGaze with HelpKidzLearn" at [www.helpkidzlearn.com/eyegaze-downloads](http://www.helpkidzlearn.com/eyegaze-downloads)

### 3. Motivation

It is important when introducing any new technology to a student that their first experience is positive and fun. Choose activities that match their interests, give immediate feedback and automatic success. Try to avoid too many prompts or questions and allow the student plenty of time to explore and experience eye gaze by themselves. Try to provide a variety of activities and play them frequently for short periods. If you are not sure what motivates your student, make this one of your first aims and try a variety of images, sounds and video and observe what captivates them most using eye gaze analysis tools.

# Learning Stages Software

Aim	Learning Stage	Software
Assess	 Visual Skills	Attention and Looking
	 Preferences and Comprehension	Attention and Looking / Exploring and Playing / Choosing and Learning
Include	 Cause and Effect	Attention and Looking / HelpKidzLearn / Look to Learn
	 Turn Taking	Exploring and Playing / HelpKidzLearn
	 Exploring and Control	Exploring and Playing / Choosing and Learning / Eye Can Fly / HelpKidzLearn / Look to Learn
	 Choice Making	Exploring and Playing / Choosing and Learning / Eye Can Fly / HelpKidzLearn / Chooselt! Maker 3 / Look to Learn
	 Curriculum	Eye Can Fly / HelpKidzLearn / Chooselt! Maker 3
Engage	 Stimulate	Attention and Looking / HelpKidzLearn
	 Games and Leisure	Exploring and Playing / Eye Can Fly / HelpKidzLearn / Look to Learn
	 Communicate	Choosing and Learning / Chooselt! Maker 3 / Grid 3
Empower	 Windows Control	Grid 3
	 Environmental Control	Grid 3

## 4. Visual Skills

Before trying eye gaze, find out if the student has any recognized visual difficulty that could affect seeing images on screen. Most eye gaze devices cope well with different types of glasses (though special coated or progressive lenses may be less successful). Check for bright lights reflecting off screens and lenses or thick frames that could interfere with eye gaze detection. There is usually an option to track just one eye to compensate for physical eye movement difficulties. Eye gaze analysis tools can help in assessing basic visual skills such as detection, tracking, scanning and discrimination.

## 5. Positioning

With all access devices positioning is critical in achieving success. Ensure your student is positioned correctly according to guidance from your eye gaze device so that the tracker can easily detect their eyes and the student is comfortable and relaxed. To achieve this, some students may need a flexible mounting system to position the screen at the right angle and height. For others you may need to consider a portable system or a classroom resource that can be altered for a range of students. Try to consider who you are going to use it with, where will it be used and on what device from the outset.

## 6. Support and Training

Setting up, using and adjusting eye gaze devices has often needed the support and guidance of experts in the field. At Inclusive Technology we believe that this process should be made as simple as possible so that more professionals and students can benefit from this amazing technology. We have worked hard to design and deliver easy to use, intuitive interfaces and software that require little or no training to use. However, it is still going to need the expertise and support of the team around the student to interpret results and provide the right resources and time allocation to ensure success.

## Where to start - Equipment

### Eye Gaze Devices

Dedicated devices are great for meeting an individual's needs, but peripheral portable trackers are proving much more useful for the classroom and advisory services – and are considerably cheaper. Although they all do a similar job, how they operate differs considerably. Choose trackers that have been designed for a wide range of needs.



- ★ **myGaze Assistive**, created by Inclusive and Visual Interaction to be;
  - Affordable – for most classrooms and services.
  - Easy to use – unique 3 step process all staff can use.
  - Appropriate for a wide range of students' needs – with easy calibration, distraction free operation, default mouse emulation and independent access mode.

### Mounting

You will need to position the screen and tracker so that the student's eyes are visible. A wide range of mounting solutions are available, depending on what you want to mount and where, from simple table stands to fully flexible floor stands. Consider use of height adjustable tables and chairs too.



- ★ **All in One Eye Gaze** – package comes with flexible floor mount options to meet most positioning needs.

### Computers and Screens

You will need a Windows computer (7 or later) and check the connection used by the tracker – some specify using USB 3.0 only. You can use screens generally from 10" to 22". Use with laptops, desktops and monitors, all in one devices and Windows tablets. Choose an up to date computer and generous screen size where possible for best results.

- ★ **All in One Touch PC** – a useful accessible classroom resource with great screen size for eye gaze.



### Eye Gaze Software



You may want to start with software specially written for eye gaze users. There are a growing number becoming available. Look for titles that provide a progression of skill building activities AND analysis tools to help you review, record and evaluate eye gaze behaviour.

- ★ **Inclusive Eye Gaze Learning Curve software** – a unique collection of fun activities designed to help assess and teach eye gaze skills from cause and effect to communication.

### Other Software

**HelpKidzLearn**



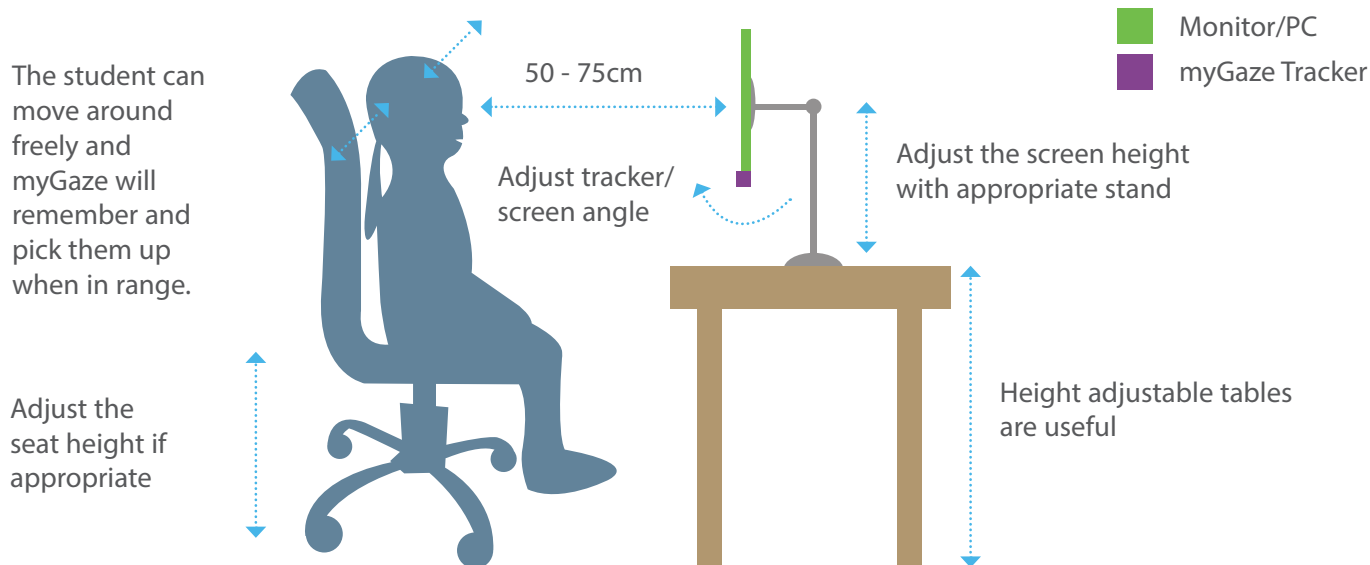
Choose an eye tracker that uses mouse emulation with a range of functions so that a wealth of mouse operated software can be opened up to the eye gaze student. With some consideration of access settings and skills needed, you can include your student at a level appropriate to their learning using your favourite classroom software.

- ★ **HelpKidzLearn** is used in 1000's of schools globally and has over 50 activities accessible by eye gaze.

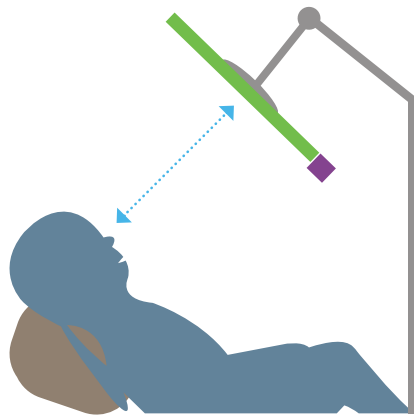
## Where to start - Positioning

As with any access device, correct positioning of equipment and student is essential in getting the most out of eye gaze. Good seating and positioning guidelines that your Occupational Therapists will be able to advise you on, are where to start. Use the students own supported seating system as appropriate or in any position where the student is comfortable, relaxed and able to see the screen easily. The myGaze tracker camera will need to have a good view of the students' eyes in order to track them accurately.

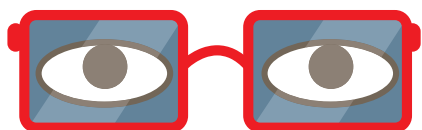
Here are a few positioning guidelines;



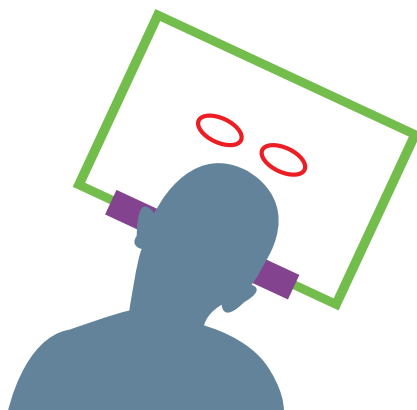
**Reclined position** - May need to mount the screen above using specialist mounts e.g. floor mount.



**Glasses** - myGaze works with most lenses (some specialist lenses can be tricky). Watch out for frames/lashes/lids obscuring eyes.



**Tilted position** - If student's head is normally tilted, you can tilt the screen and tracker to match.



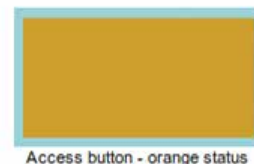
**Track both or just 1 eye** - if student has a significant problem with one eye.

**Lighting** - the student and tracker may struggle to see in bright light conditions. Watch out for reflections off lenses and screens interfering.

• Red - Incorrect Position



• Orange - Better Position



• Green - Correct Position



**TIP** Set up a keyboard shortcut in Configuration settings to bring up the positioning guide at any time.



## Where to start - Calibration

In order to know where the student's eyes are looking on the computer screen, you must first "teach" the computer what the eye looks like when the student looks at known locations on the screen.

This is calibration.

Use the "glasses" guide and when a good position is achieved, choose from 0, 1, 2, 5 or 9 points for the student to look at on screen. The more points the student looks at, the more data myGaze has, resulting in more accurate eye tracking.



*Optimal position. Click on quick access buttons for different calibration points then Calibrate.*

However, for some students, attending to the screen (particularly on initial presentation) for a significant length of time or detecting easily 5 or more points is difficult. It is still important to obtain a good calibration with data from the student's own eyes so that results are valid and useful. EyeMouse Play has unique easy calibration settings to help students at all levels calibrate.

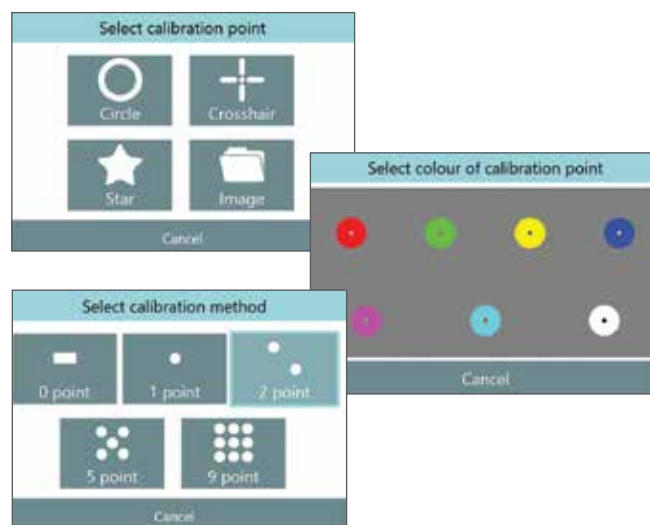


With 0 points, just find an image, animation or sound that will attract their attention to the screen and myGaze will capture data as soon as they look at it.



We have found that for early cause and effect type activities, a 1 or 2 point calibration gives most students good functional use of eye gaze. For later choice making, communication and writing activities you would look to achieve a 5 or 9 point calibration for better accuracy.

Calibration need only be done once. Make a profile for each student and their settings, including calibration data, will be saved. If you move to a very different environment, it may be worth recalibrating. You can improve a student's calibration as their attention skills improve or you find more interesting stimuli they will attend to;



You can easily change the shape, colour or type of image used for calibration. Browse through your own images to find something you think will capture the student's attention the most.



## Assess

Eye gaze is unique as an assistive technology tool in that it can be used as an access device and as a tool to help gain insight into the visual and cognitive processing of our students. We can observe how our students respond to different stimuli and prompts; find out what attracts their attention on screen; look at movement patterns and start to form theories on preferences and understanding.

Analysis of eye gaze behaviours is based on the important assumption that there is a strong relationship between what we look at (fixate on) and what we are thinking about. This is based on the "strong eye mind hypothesis" formulated by Just and Carpenter in 1980 - "there is no appreciable lag between what is fixated and what is processed" i.e. when we look at a word or object, we also think about it (process cognitively) for exactly as long as the recorded fixation.

We still cannot infer specific thought processes directly from where someone is looking e.g., looking at a face in a picture may indicate recognition, liking, dislike, puzzlement etc. so we still need to use eye gaze analysis in conjunction with other assessment techniques.

### Objective Recording of Data

We have been interested in what our eyes can tell us about development and learning since the 1800s when scientists first started developing techniques and equipment to record eye gaze behaviours. Modern eye trackers are now used extensively in research, marketing and development fields providing objective data to aid our understanding of the most hidden and complex cognitive processes we use every day.

For the first time, classroom staff can use this eye gaze technology to record objective data on students' initial skills and for progress records. Although not intended as a diagnostic tool, there are interpretations of the data teachers and therapists record that can have a real, practical impact in the classroom. We are interested in finding out, for example;

- Can the student see/attend to images on screen?
- What images do they attend to and what do they like looking at?
- Do they understand/make sense of pictures?
- Are their looking behaviours and eye movement patterns as expected?
- Can the student control the computer using eye gaze?



### Assessing Visual Skills

Over 75% of our learning is through vision. Vision is a complex process that involves visual systems, cognitive systems, social interaction and motivation. Many of our students with more complex needs can have difficulty with these processes, and it is not unusual for some to remain undetected during their school career, with an obvious impact on their learning.

### Early Vision Skills

Some of the early vision skills we might want to look at with our students are;

- Looking at Images (detection and fixation).
- Visual Attention (sustained fixation).
- Tracking (fixation and smooth pursuit movements).
- Recognition (perception and memory skills).
- Inspecting (shifting gaze and saccadic movements).
- Searching (discrimination and comparison skills).

## Looking at Images

What images can students detect or see when they appear on screen? Are there types, sizes, colours of images that the student finds easier/ more difficult to detect?

A fundamental skill needed for using eye gaze technology is the ability to detect and fixate on images on screen. Students who have difficulty with this activity may not be at the stage where they are interested in attending to the screen and require a more sensory input. However, activities and analysis tools that look at this skill are useful in highlighting students who may have significant visual difficulties. Consult with a vision specialist if you observe unusual eye movement patterns or looking behaviours. Save analysis recordings for reference.

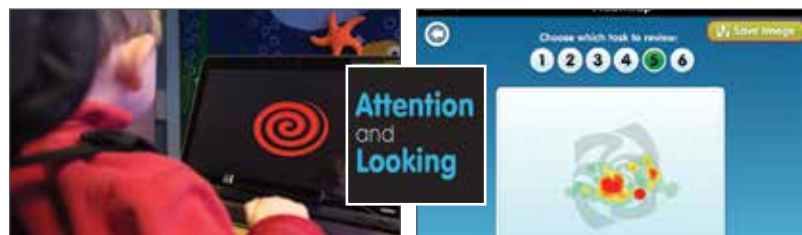


The Find Me activity from *Attention and Looking* is designed to explore detection and fixation skills. Images appear on screen and just a look at them makes them 'pop'. Use the extensive options to control what images appear on screen to gain insight into what students do and do not respond to on screen.

## Visual Attention

Is the student interested in attending to the screen? How long do they attend to it? What are they interested in looking at? Are they able to direct their gaze centrally on the main image? Can we improve their visual attention skills?

For some students, you may need to start with getting them interested in looking at the screen. You can begin with showing animations or movies that you think will captivate their attention. Leave the pointer visible onscreen to show you where the student is looking. Also try activities that provide a cause and effect from looking, e.g. looking at the screen will make something nice happen, looking away makes it stop.

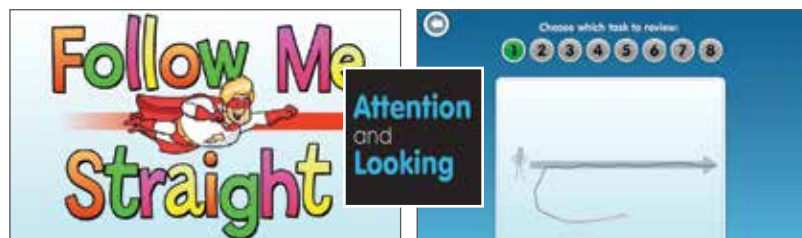


All the activities in the Fixating section from *Attention and Looking* are designed to assess and teach visual attention skills and cause and effect understanding of looking at the screen. Heat map analysis gives an indication of sustained fixation skills.

## Tracking

Does the student respond to images moving across the screen? Can they fixate and track a moving object? Are their eye movements smooth or scattered? Do they follow the path of movement accurately?

These activities are useful for checking that the eye gaze technology is working well for the student and to help assess whether positioning and calibration are good. They are also useful as a guide to determining presence of very early visual skills.

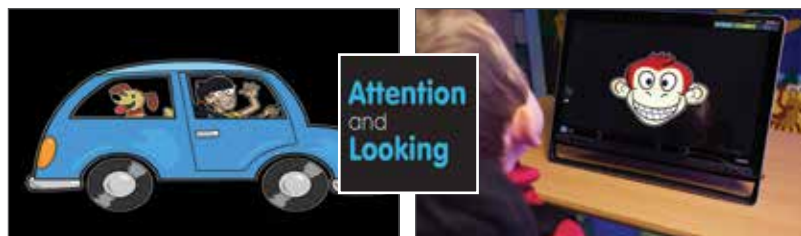


The Follow Me activities from *Attention and Looking* provide a variety of tracking tasks, looking at direction of movement, speed and type of images students can follow. Use the extensive options to change stimulus and background. Line trace analysis shows the movement path of eye gaze.

## Recognition

What parts of a scene or picture does the student attend to? Do they notice the main features of an image or peripheral aspects? Do they recognise or remember images? Do they look at appropriate parts of an image in response to prompts?

For some students at early levels it is useful to just observe what the student looks at in response to seeing an image. For other students, you may want to observe how they react to animation, sound or verbal prompts. Try to avoid making the activity into a test situation, at this stage, give verbal support only when needed.



Look Around and New Faces activities in *Attention and Looking* provide simple images with key features that animate when looked at, or add your own images for unique assessment opportunities.

## Inspecting

Can students easily shift their gaze/attention to different images on screen? Do they notice more than one image on screen? Are they able to look from one image to another and back? Do they inspect images in detail or fleetingly?



Pinball and Aquarium from *Attention and Looking* offer early exploratory scenes that gradually increase the number of images to inspect on screen.



Most of the activities in the *Take Turns* section of *Exploring and Playing* offer two main images to look at and select to assess and practice gaze shift. Use *One Player* option for practicing Inspecting skills.

## Searching

Does the student actively explore the scene? Show recognition of the target image? Use inspecting behaviours to compare and discriminate? These behaviours are the first indicators of using our eyes for expressive purposes and skills usually develop in a pattern, starting from seeking eye contact in others. They increasingly involve more cognitive processes, requiring recognition skills and the ability to discriminate and compare.



*Wake Up!* and *Who's Different?* from *Attention and Looking* help assess and teach early searching behaviours. Use the options in *Who's Different?* to look at discrimination skills for characters, shapes, colours and size.



## Looking to Prefer

What does the student like to look at? Do they show a preference for certain types of images? Do they demonstrate recognition of familiar images?

The length of time an image is looked at is used often as a measure to determine recognition and preference for an image. Try different options in activities or use your own images and let the analysis tools measure how long your student attends to them. Note any patterns for colour, size or type of images your student looks longer at. Determining preferences and motivations is a critical part of the teaching process for students at the early stages of interaction.



Add your own images in Fill It Up and Clear It Up activities from *Attention and Looking*. Use the video playback analysis to look at where the student is looking and for how long.

Cup of Tea and Magic Machine from *Exploring and Playing* offer scenes with magic animations giving you feedback on where you prefer to look.

## Looking to Choose

Can the student make choices, do they have all the necessary choice making skills? What choices do they make? Which type of choice making works best for the student?

Making choices involves a complex set of skills that build towards decision making. Most infants are given frequent opportunities to make free choices and experience the consequences of those choices, initially, with lots of interpretation and modelling from the caregiver. Similar frequent opportunities should be provided for the eye gaze student with a variety of choice making activities that gradually build skills and understanding.



Activities from the Choose Anything section of *Exploring and Playing* are a good place to start with choice making. They provide easy access and lots of variety to give you feedback on your choice making plus opportunities to demonstrate preferences.

All 18 activities from *Choosing and Learning* are designed to assess and teach specific choice making skills and provide lots of variety and opportunity for customisation. Use to determine which style of choice making your student performs best in.



## Looking to Tell

Can the student accurately access a grid of selectable buttons? Are they ready for more formal on screen communication and writing grids? Do they have all the skills needed to make free expressive choices?

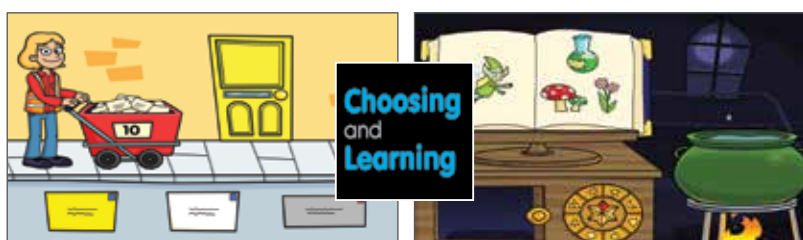
Finally, we start to use our eyes to communicate messages to others. For eye gaze users, this is the stage where we can start to introduce communication and recording activities to enable our students to participate and contribute in lessons and activities. At this stage, it is important that the student's access skills are accurate and purposeful before expecting appropriate use of on screen communication or writing grids.



Activities in the Explore section of *Exploring and Playing* provide opportunities to assess and practice accuracy and selection skills in preparation for communication and writing grids.



Learning to communicate is all about interacting with others. The Take Turns section of *Exploring and Playing* is unique in offering 2 and 3 player games that fully include the eye gaze user in helping to teach turn taking skills.



The Multiple Choices section of *Choosing and Learning* provides a collection of early communication and literacy skill building activities. Use these activities to assess skills such as matching, sequencing, categorising, discrimination and comparison skills and early expressive skills.

## Using Non-specialist Resources

Now try using other, non-specialist eye gaze software to provide further opportunities for Looking to Tell;

## ChooseIt! Maker 3



*ChooseIt! Maker 3* can be used to create your own customised quizzes and choice making activities. It's easy to add your own content to make it relevant and motivational. Eye gaze access is built in.

## Considerations

Not all eye gaze technology works well with all types of eyes and positions. If initial trials with eye gaze are not as hoped, it may be worth considering trying in other environments or at different times of the day or with different activities.

Many poor results from trials of eye gaze are due to difficulties with positioning and calibration – your physical or occupational therapist may be able to give you guidance. Consult with your local vision specialist if you have any unusual findings with vision skills.

Do also compare and contrast your student's performance with different access methods. It is always a good idea to try out the technology and activities on yourself, to check if they are working as you expect, before using with students. Contact our friendly Tech Support Team if you think there are any technical issues:  
Tel: +44 (0)1457 819790  
Email: [info@helpkidzlearn.com](mailto:info@helpkidzlearn.com)

# Analysis

Eye gaze analysis tools record the data of where and when a student looked during specific activities. This data can then be reported back in different ways to show various eye gaze behaviours. These reports and images can be saved for reference and record keeping providing an invaluable assessment and teaching tool for teachers and therapists.



All the titles in the Inclusive Eye Gaze Learning Curve Series include inbuilt Analysis tools of Video Playback, Heat Maps, Line Trace and Summary Reports for all activities.

**Video Playback** is useful for analysing in detail where, when and what a student looked at during an activity. Video playback can help you determine if prompts are used by the student to direct attention and whether these are sound or visual prompts. With this option you can see clearly if the student detects and follows images on screen and video can help you determine how accurate calibration data is compared to eye movement patterns.

**Heat Maps** are commonly used to report back eye gaze behaviours and are particularly useful in getting a snapshot of where a student looked on screen and where their attention was most directed to. Colour indicates areas of concentrated gaze where fixations occur, with red indicating the most looked at areas.



Heat maps are particularly useful in quickly showing eye movement patterns (e.g. smooth pursuit in tracking activities) and can show at a glance where a student's focus of attention is.

**Line Trace** recordings are useful for demonstrating where a student looked on screen and how much they moved their eyes around the screen. Useful when observing searching behaviours.



A **Summary Report** detailing the timing and options chosen during the activity is useful for saving and printing for individual records and provides an 'at a glance' record of a student's eye gaze behaviours.



## Assess - our stories

### Anabel Drought – ICT Coordinator, Beacon Hill School

Bradley is a 5 year old little boy with PMLD who has a mischievous happy personality. Whilst Bradley could and can use a switch to activate different things, he chooses not to. We decided to introduce Bradley to eye gaze not knowing what to expect. After a few weeks working with Bradley he continued to make steady progress through the tracking programs. However, following an extended illness and hospitalisation, we wondered if he may have regressed.

We were pleased that we had an accurate way of assessing his work from the saved data in the Attention and Looking Software. The data showed that his location accuracy had deteriorated; it took a further 5 weeks to get back to previous levels. Since then Bradley has continued to have intensive weekly input up to 3 times per week, to develop his skills in using his eyes as a control device. The data shows that Bradley is extending his concentration. Without this software it would be difficult to assess Bradley's ability and progression.

Using the "Look Hear" in the fixating section, we are able to add some of Bradley's favourite music tracks; his excitement in activating the music is obvious for everyone to see. Bradley has started to use "Who's Different", this is helping to extend his concentration.



### Gillian Hazel – Independent AAC Consultant

The Inclusive Eye Gaze Learning Curve Software has enabled me as a clinician to learn more about Kai's ability to use eye gaze and is showing clearly which eye movements are easier than others. It also allows me to control some of the variables such as direction of tracking so I can begin with the direction that is easiest for Kai to build success while gradually introducing more difficult to track directions. By using the Inclusive Eye Gaze Learning Curve Software Kai has lots of fun activities to use for different aspects of eye control. So far he is showing signs of improvement in locating and fixing that are very encouraging in a relatively short space of time and this is enabling him to begin to use eye gaze for very basic interactive play.



*Kai's ability to fixate as a result of using the activities in Attention and Looking has improved greatly as can be seen in the Cookie Machine activity.*



*Kai enjoyed the Magic Painting activities and although his line trace showed excessive eye movement for the activity, he demonstrated the ability to cover most of the screen.*



## Jennette Holden – ICT/AAC Coordinator Pendle View Primary School

Jesse is 5 years of age, has Cerebral Palsy and delayed visual maturation. We were unsure of exactly what he could see and make sense of on the computer. It is difficult for him to keep his head upright for long periods and he is very easily distracted, so we have had to try a few different positions and environments. He is now starting to show an interest in the screen and the tracking activities in Attention and Looking have given us lots of information on his visual attention and detection skills. We have used the options to personalise the activities (e.g. big objects) – his favourite game at the moment is “Splat” (Exploring and Playing).



## Jennette Holden – ICT/AAC Coordinator Pendle View Primary School

Bailey is 7 years old and has a complex medical history including epilepsy surgery and an unspecified visual impairment. He is a little boy who can become very frustrated. His parents feel this is because he can't get his message across. When choosing objects/activities (with low tech), we struggle to be sure of where he is looking due to his eye movements. We were able to calibrate Bailey using the 1 point calibration on myGaze. Using the analysis tools (from Attention and Looking) has been invaluable in giving us the information we need to support this young man's learning. It has also shown us that he is able to follow and understand simple instruction when accessing certain activities on the computer.



*Bailey loves the music activities, Robot Factory and Splat.*

## Iveta Power, ICT/ AAC Coordinator, Chailey Heritage School

Attention and Looking has been great especially for our PMLD pupils and also pupils with visual difficulties. Options allow choosing appropriate images/colours and size of images for individual pupils, and it has been particularly useful to see if they can track and locate objects on the screen. We like the heat maps and try to save them after each activity. They have also helped us demonstrate progress in some of our students by comparing heat maps over a period of time.



## Anthony Rhys, SEN Teacher, Trinity Fields School

Inclusive Technology have released three sets of programs for eye gaze users that meet the needs of the user as they progress in their use of eye gaze. In Attention and Looking there are a range of tracking, fixating and locating activities all using the familiar bright and cheery graphics we come to expect from Inclusive Technology. It's real value lies in assessing the skill set that pupils have when using eye gaze systems and where to go next as the program also records sessions as heat maps or video- so you can record and save the session- essential for having a record of their work and also to mark progress and ability.

We've set up a central dropbox account so all the saved records are stored centrally and can be viewed by staff throughout the school- teachers, SLT, VI etc. The heat maps or recordings are created and can be saved very easily and quickly.



# Include

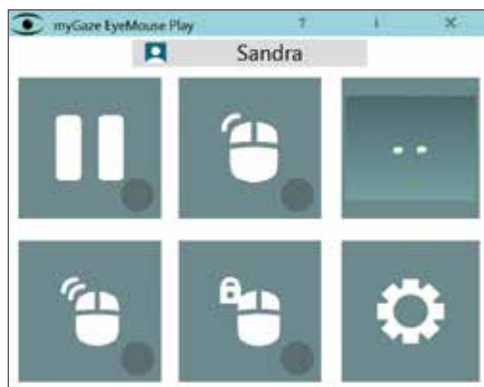
Eye gaze technology as an access method has revolutionised communication and computer control for many students requiring an alternative access solution. Eye gaze control can offer a quicker, easier; more direct and less fatiguing form of access than many other specialist resources that have traditionally been used, e.g. switches, head pointers, rollerballs.

We ultimately want our students to focus their attention on the learning content of the activity or be able to communicate and participate in time, not for the focus to be on physical access. Practice so far shows a short learning curve for many students introduced to eye gaze, particularly when compared to students mastering good switch access skills.



*Declan practised using a switch for six months and was able to play cause-and-effect and some switch-timing games. He then tried eye-gaze for two weeks and was able to play a 28-card memory game. Eye gaze technology enabled Declan to access activities appropriate to his learning level, rather than be limited by his physical abilities.*

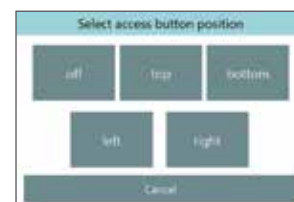
myGaze Assistive is unique in offering a default mouse alternative eye gaze solution. This enables easy operation and understanding of control plus opens up a wealth of software titles. These you would normally control with a mouse or pointer control, you can now use with eye gaze!



Default = pointer movement only. No selection needed, once in position and calibrated, you are ready to access all the specialist eye gaze titles, *Chooselt! Maker 3*, plus many *HelpKidzLearn* activities and AAC grids.

OR select to choose 'mouse' function;

- Pause – no eye gaze interaction.
- Single (left) Click.
- Quick Positioning Guide.
- Double Click.
- Click and Hold.
- Configuration Menu – to change all settings.



## Two levels of inclusion are built into EyeMouse Play;

1. For supported students – Turn off the Access Button - teachers and therapists can control how the eye gaze interacts with no distractions on screen for the student and handy keyboard shortcuts to help with positioning and interaction without having to quit activities.
2. For independent students – Turn on the Access Button – students will be able to use the Access Button to check their positioning (with simple colour coding), change mouse functions and alter settings in the configuration menu, all using eye gaze.

## Cause and Effect

Understanding that your eyes are causing an effect on screen is a fundamental cognitive skill needed for those wishing to use eye gaze control. It is not the 'norm' to use our eyes to move the pointer and select things on screen (even classroom staff often need some convincing!), so we would argue that cause and effect activities are a great place to start for ALL students first trying eye gaze control.

You may find that initially students move their head around or reach to touch the screen. You may find that when you first try eye gaze, the muscles in the back of your neck tense and your eyes feel strained after a few minutes of using. This is normal! However you will find after a short period of time with 'little and often' exposure, you will become much more relaxed and eye control becomes easier and feels more natural. Different students will take different lengths of time to acquire easy, fluid control, so start with easy access, immediately successful activities that provide motivational feedback.

## Look and Keep Looking

Using our eyes to teach cause and effect understanding may need a slightly different approach to other access methods. An initial objective may be to teach visual attention to the screen. Activities that detect when a student is looking at a screen and when they are not are often a great place to start. The student receives motivational feedback when looking at the screen (animations and sound effects). This feedback ceases when the student looks away from the screen. Well timed prompts help bring the student's attention back to the screen;



Activities in the Fixation section of *Attention and Looking* use the "Look and Keep Looking" activation method to teach cause and effect understanding using eye gaze. Customise *Look Hear* with the students favourite tunes.

## Look to Activate, Look and Move

However, you can also access many of your favourite cause and effect activities and software by choosing the appropriate mouse function and dwell time in EyeMouse Play. For activities that normally require a switch press or touch of the screen to continue, select the Single Click mouse function and set the Dwell Time to minimum.



Why not try with our popular cause and effect titles; *Big Bang Patterns* and *Big Bang Pictures*?



For guidance on using eye gaze with *HelpKidzLearn* see [www.helpkidzlearn.com/eyegaze-downloads](http://www.helpkidzlearn.com/eyegaze-downloads)

## Turn Taking

Communication competence is the ultimate goal for many of our students and a very basic skill is to learn to enjoy interacting with others. Play is important for developing so many skills and cooperative play offers plenty of opportunities to build skills and helps students become integrated members of a classroom.

Eye gaze users are often isolated in their use of the computer and rarely get real opportunities to interact and play games with others. Activities that involve more than one player or require students to take turns in play and interact with others should be sought out for students at the early stages of communication.



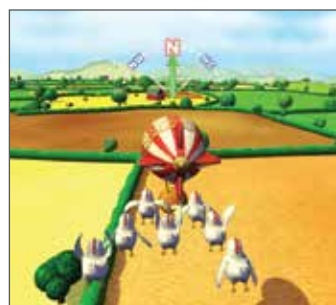
The Take Turns section in *Exploring and Playing* offers 6 multiplayer games to practice turn taking with your teachers, siblings or friends. You use eye gaze and your partner(s) uses a switch or the keyboard to join in.

## Exploring and Control

The very title 'teacher' suggests that we should be teaching or directing our students in their activities. We find that most students benefit from time to explore, play, make mistakes, initiate, repeat and refuse without any direct intervention from an adult. Offer activities that provide opportunities for free exploration and early control without significant consequences. Try to keep quiet and observe (it's harder than you think!) or comment about the activity rather than direct or test at this stage. Here, students are beginning to build and express preferences, but may not be at the stage of intentionally communicating these preferences. Use analysis tools to find patterns in what, when, where and for how long students look at different images to build a picture of their possible preferences, motivations and understanding of early concepts. Also use activities at this stage to develop accuracy and control of eye gaze skills.



All the activities in *Exploring and Playing* are designed to provide a variety of opportunities for free and guided exploration and control of images and scenes on screen. Use the analysis tools to record possible preferences over time.



Easy starting activities and adjusting control settings in *Eye Can Fly* allows even early explorers the chance to experience virtual flying whilst refining their control and accuracy of eye gaze.



Why not try with our *Target and Touch Series*? Designed originally to develop touch access skills, many of these activities can be used with myGaze by choosing the Single Click mouse function with Dwell Time to minimum or Click and Hold mouse function for finger dragging activities.

*IT Mouse Skills* is another popular PC title that works well (for most activities) with eye gaze and is great for developing skills in stages.





## Choice Making

An important life skill and building block for expression. For many students this is a difficult stage to master, mainly because there are so many variables to factor into decision making and many cognitive processes are required to act quickly and simultaneously to make a desired choice.

And doesn't it depend largely on what choices there are on offer? Students have to be interested in the choices offered to want to engage in the demanding thinking process. If we expect our students to use their efforts thinking of the answer to the choice question, then we must ensure that the presentation and access to the choices is as easy as possible for the student.

Think carefully about how you present choices – are they visually/perceptually accessible to the student? Can they cognitively process a selection of multiple choices and make a decision? Do they make appropriate choices? Can they easily access their desired choice?

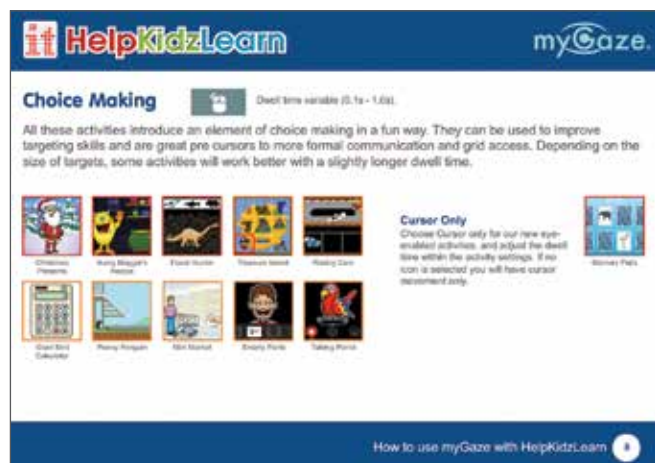


All the activities in *Choosing and Learning* are designed to assess and teach specific choice making skills and present choices in different ways to assist access and/or reduce cognitive processing.

## ChooseIt! Maker 3

*ChooseIt! Maker 3* has inbuilt eye gaze access and provides easy to use tools to create a variety of choice making activities with your own content to meet individual and classroom needs.

Note: You will need to be ONLINE to use *ChooseIt! Maker 3* with eye gaze access.



Other popular Inclusive software titles you can use for choice making with eye gaze include the *Choose and Tell Series*.

These titles are not eye gaze enabled, but you can use with Single Click mouse function with approx 1 second Dwell Time (do experiment with shorter and longer Dwell Times, keyboard shortcuts in EyeMouse Play are useful for this.)



## Curriculum

Students attend school primarily to access the curriculum, to gain skills in core subjects such as literacy, numeracy and science, to equip them for further learning, employment and life skills. The core design of myGaze Assistive is to enable students of all abilities to access the computer in as standard a way as possible using eye gaze. Pointer control is simply emulated giving the user the power to access many software titles and online activities that you would normally access with a mouse. You can try using all your favourite curriculum titles with eye gaze.



Titles in the *ChooseIt! Ready-mades Series* are not eye gaze enabled but you can still use them with mouse pointer settings in the software and selecting Single Click with a Dwell Time of approx. 1 second in EyeMouse Play.

You can always make your own choice making curriculum activities with eye enabled *ChooseIt! Maker 3*.



You'll find a large, and growing variety of early language, literacy and numeracy activities at [www.helpkidzlearn.com](http://www.helpkidzlearn.com). All new activities are eye gaze enabled, but you can access the others by selecting Single Click mouse function and a fast Dwell Time.



Ever wanted to experience what it's like to fly around the world? Let Aimee guide you through twenty four exciting missions to become a fully fledged eye gaze pilot whilst learning Geography skills such as compass directions, landmarks and regions across the world.

## 'Easy Access' to Grid Based Software

EyeMouse Play is also equipped with automatic grid detection allowing students using most grid based software easy access to grid layouts. Using default cursor only mouse function and centre cell selection, EyeMouse Play compensates for natural eye movements and eases fatigue of pointer control in grid layouts.



It is sometimes necessary to give consideration to the design and layout of buttons, particularly navigation controls, when using with eye gaze. It is difficult for most eye gaze users to target small icons and areas, adjust where possible.

**Watch out for more eye gaze enabled curriculum resources coming soon!**

## Include - our stories

### Iveta Power, ICT/ AAC Coordinator, Chailey Heritage School

We love the games in Take Turns as they can be played by two players using different access methods. It gives our pupils an opportunity to learn turn taking and also play games together and independently.



*Here are Charlotte (using eye gaze) and Eva (using a switch) learning to take turns when playing the game Robot Factory.*



*And here are Ella (using a switch) and Betty (using eye gaze) enjoying playing games independently.*

### Jennette Holden – ICT/AAC Coordinator, Pendle View Primary School

One of the boys that I work with is Declan - a lovely 8 year-old boy. He enjoys football, computer games, watching TV and has a great sense of humour. Meanwhile he has the condition of global development delay, central hypotonia and emerging patterns of dystonia.

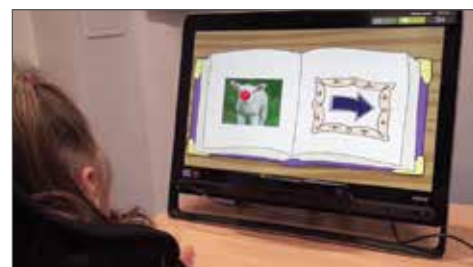
Before myGaze, Declan had accessed a computer using a switch with one switch scanning method. He is a little boy who wants to get a message across to people fast and with ease. Although he is able to use a switch well, this access method is too slow for him and limits his potential. Eye gaze has given him the opportunity to access his computer in a way which would not have been possible before – he is now able to quickly and easily access writing and communication grids.

The fact that myGaze works well with a wide range of classroom software gives Declan the opportunity to choose the same resources as his peers and to be able to progress at his own level. My favourite moment was watching Declan play an activity alongside his dad. They both played the same game and for the first time in this little boy's life he was on equal footing, and won!



### Shelagh Crossley – Deputy Head Teacher/ AAC Coordinator, Chellow Heights

Halle is our youngest student to try eye gaze at only 3 years of age. From our initial observations in school we feel she has a great deal of potential and certainly understands much more than she is able to express. We are keen to try all types of access, but due to her physical difficulties, eye gaze holds lots of promise. We are keen to provide Halle with as much of the same learning and play opportunities as other children her age and eye gaze access has the potential to be used with lots of different software activities. On her very first try, Halle showed good detection and tracking skills (Attention and Looking), very quickly coped with turning the pages in a book (My Story – Choosing and Learning) and solving simple puzzles (Pipes and Paths – Choosing and Learning). This is definitely an access method we will be exploring more to help include Halle at her appropriate learning level.



## Engage

Before learning can take place, students need to be conscious of their environment and be interested and motivated enough to attend and engage with the screen. The approach you take is likely to be idiosyncratic to the individual student. Be conscious of/find out a student's main learning channel, it could be visual, auditory, tactile, olfactory or a mixture of senses. Some students may appear to 'switch off' input in one channel in order to better process information from another.



*Katie enjoying Counting Songs. When the song pauses, Katie just has to look at the screen to play the next verse.*

You may need to try a wide variety of different stimuli on the computer to gauge interest. Remember caregivers are great sources of 'specific interest' information on your students.

Find out if there are particular movies, TV shows or DVDs the student appears interested in when in other environments and start with similar resources in the classroom. If not distracting, leave the pointer visible on screen to give you feedback on where the student is looking.

## Stimulate

At very early levels of learning, or with students with significant visual difficulties your main objective may be to stimulate the student's senses, particularly vision, to see if visual attention and skills can be improved. Choose activities that include high contrast images, plain backgrounds, images that appear, give prompts or move to attract attention. Software that has options for choice of image, size, movement and colours can be very useful for meeting specific needs.



Many of the activities in the Tracking section of *Attention and Looking* can be used for visual stimulation. All include extensive options and analysis tools.

Experiential and cause and effect activities from HelpKidzLearn and many Inclusive software titles can be used to stimulate and engage users.

You may want to consider connecting the computer you are using for eye gaze to a secondary large screen or projector. You should not expect the student to be able to control the large screen with eye gaze, this is just to display their screen to the class so that they can see what the student is doing, or use in a Sensory Room to make big effects on the wall or floor. Watch out for some sensory equipment that can be controlled simply from a screen.



## Games and Leisure

All students are entitled to play games and access leisure opportunities. It is an important learning and life skill to be able to play with others and entertain yourself – just ask any parent! Opportunities can be limited if you have mobility or manipulation difficulties. However, the computer is increasingly being used for leisure activities for many mainstream students and it is becoming easier to find games and activities that are also accessible for eye gaze students.



All activities from *Exploring and Playing* are intended to provide play, exploration and leisure opportunities for students to play by themselves or with others. You can even make your own jukebox with your favourite tunes!



Let your students have a true gaming experience in a magical 3D world in *Eye Can Fly*. Explore, collect points and unlock levels. Students of all ages can enjoy playing a game that has a real mainstream feel with challenges

that will stretch their skills.



There are even ways you can make your eye gaze control battery operated toys and mains devices (see **Empower section** on **page 26**).

Remember HKL has over **50 games and activities** that can be played using eye gaze (with more to come)!

How about a musical instrument you can play with your eyes?  
See ii-Music on **page 38**.

## Communicate

This is the main objective for many of our students, to be able to communicate their thoughts, feelings and ideas at a level appropriate to their general learning skills. It is also the area in which eye gaze has currently had the most impact. The speed and ease of using eye gaze in comparison to many other alternative access methods had enabled many students to use robust AAC software in a more communicative manner. They are usually able to use their system functionally much quicker compared to spending time learning and using other access methods and can hopefully communicate for longer as it proves less fatiguing.

Not all students will be ready to move straight to formal communication packages. Many have had limited opportunity to learn some of the basic communication building blocks; to learn the function and value of communication, to enjoy interacting with others, to understand concepts and be able to make appropriate choices from options available.

A comprehensive progression of activities is included in the Inclusive Eye Gaze Education bundle – from Cause and Effect to Communication. Specially designed to take students in small steps towards readiness for communication and recording applications.





## Engage - our stories

### Gwyneth Worthington – Speech and Language Therapist, Percy Hedley

Eye Can Fly is great fun, motivational and rewarding for pupils whilst also combining good educational content such as spatial concepts and world geography. They are learning without realizing because it is such good fun. The lessons are short and well-presented and follow progressively to build on knowledge and skills. A no fail element is a feature and students are supported to follow the instructions with excellent cues and hints.

RMB (18 years old with Cerebral Palsy) was thrilled with the game and now wants to be a pilot! He would like more games like this. In his own words, using eye gaze and communication software; *"I liked video game. I liked plane Jet because school plane".* (flight school) *"I like be pilot".*



### Carol Allen – School Improvement Advisor for ICT and SEN North Tyneside

As a Local Authority, we decided in 2014 to investigate what eye-gaze had to offer the range of students in our schools. In North Tyneside, we constantly strive to explore and exploit technology as it becomes available for the benefit of our students, their families and the educators who work with them in school. The Foundations bundle, combining the myGaze system and the "Attention and Looking" software, gave us exactly what we had been waiting for to start as it has clear graphics, simple set up, and the activities are easily linked to the areas we wish to focus on. We have been incredibly heartened by the initial results of this study. Already the first series of trials proved that this is an access method that we wished to explore further.



#### A moment of true joy for every educator

We were working with a little girl called Sally who has a degenerative condition. Sally very quickly understood she was activating the program with her eyes and this was apparent through very obvious eye movements - widening and blinking when she found the object so she could pop it. I can't describe the feeling we all had when we realised she could do it, it was one of those goose bump moments, we all felt it at the same time!

### Sean Carroll - Independent IT/Assistive Technology Consultant

I tried "Eye Can Fly" with a 36 yr old gentleman today who has Athetoid Cerebral Palsy and little opportunity to interact with his environment and virtually no communication.

This is a chap who has sat in his chair since he was 19 with very little to occupy himself with, and even when at school I don't think his independent access skills were attended to very much at all. This fellow is often distracted, probably because the discomfort that he must constantly experience as a result of his condition, but when he was focussed he did well in carrying out the little tasks that the flying school offered him.

This game has changed not only his life in some small way but also his parent's lives because they are seeing him playing an activity that looks like a similar game that their grandkids play on the Wii. We talked about how others in the family can play using mouse, joystick, keyboard or switches and everyone was excited about it. I personally find this title to be one of the most exciting to come out in years.

# Empower

The ability to have control in your life, what you do, when you do it, is something that most of us take for granted, but is important in developing a sense of self and in building self-esteem. Many students with physical, learning, sensory or communication difficulties have very few true opportunities for taking control of their lives.

As the world, including the home, is becoming more connected through the Internet and computers, so opportunities increase for our students to have more say in what they choose to do in their lives. Providing the tools to allow students to become as independent learners and people as possible must be the ultimate aim of professionals and carers working with them.

## Windows Control

For some students, giving access to the Windows environment on a PC opens up a wealth of possibilities for independence and control. Choose which software to open; play games, browse the Internet, shop, watch movies, email, Skype, Facebook ... and much more.



*Well sized and placed Icons and Tiles can make a big difference in increasing access accuracy.*

myGaze offers a great starting place for simple Windows access.

Turn on the Access button in Configuration settings. You can choose the size and position of the onscreen button or choose no visible button, but a look at the tracker instead will bring the menu up.

Look and dwell on the Access button and the mouse function menu will appear. Dwell on the appropriate function and the menu will disappear.

Now move your pointer to the appropriate icon and dwell to perform function (e.g. double click on desktop icon.). Button changes colour to indicate positioning.

## Environmental Control

It may be the practical, everyday activities that are most important for your student to control. It could be as simple as switching off a light, turning on the radio or changing channels on the TV that make a difference by providing choice and independence.

Many dedicated communication devices have an environmental module built into the system. This allows you to communicate via Infrared, Bluetooth or Radio signals to electrical devices and adapted furniture. Environmental control modules are available for the PC. You will need suitable software that talks to the EC module. Watch out for exciting new developments in this area and new products coming soon;

Try the Toy Control Box from BJ Adaptaciones. It allows you to choose from 1,2,3 or 4 onscreen buttons to control up to 4 switch adapted toys.



Or check out the very new EC grids in Grid 3 from simple to sophisticated control of your home and gadgets.

## Empower - our stories

### Fil McIntyre – Lead Assistive Technologist, Beaumont College

J is 20 years old and has been using eyegaze for about 1 year. Choosing and Learning came along at just the right time. J had been using a range of eyegaze packages as well as experimenting with The Grid for environmental control.

He had been showing that he was a bit fed up of repeating the same activities, even though he still needed to enhance those skills. We decided to give Choosing and Learning a try. We were unsure about whether J would be able to access some of the decision making tasks, but he engaged with several of them.

In particular he enjoyed deliberately getting it wrong in the Wash It Up activity and experimenting with making cakes in CupCakeinator. The next step for J is to integrate Eyegaze use into most of his teaching sessions. This will mean using a wide range of EyeGaze activities including Inclusive EyeGaze and Look To Learn to enhance and grow his skills, and The Grid 2 for choice making and environmental control.



*J's favourite activities – making deliberate mistakes!*

### Sara Barbee – mother to Sonja, a girl with Rett Syndrome

We have tried low tech ideas and high tech ideas with Sonja to help her communicate – with very little true success. Rett Syndrome's real challenge is motor planning. Sonja has no verbal or hand skills and is often challenged with how to communicate basic wants and needs with someone who does not know her well. What we know about Rett Syndrome is that there is so much in their heads, and you can tell it, but very rarely are they able to express it. With the myGaze device, we see our daughter make choices that she has never had the ability to make. We see the potential for true communication. Sonja is currently using it daily in school and her aides see Sonja answering questions and making choices with myGaze. The ability to have people understanding you is a very powerful thing. We specially love that it can be used for making choices online (Facebook, Youtube, emails). As Sonja's therapist said, Sonja is really progressing so well with the device.



*Sonja playing Disco from Exploring and Playing.*

### Iveta Power, ICT/ AAC Coordinator, Chailey Heritage School

Eye Can Fly is very popular amongst students across all departments. It has lovely graphics (similar to mainstream games); it is very motivating and most of all fun! Pop the balloon is particularly very popular and our students are very motivated by trying to improve their score and beat their peers. It even got one of our students, who had been quite reluctant to use eye gaze, very excited!





## How does Eye Gaze technology work?

Most eye trackers we use work in a similar way. In simple terms, they project harmless infrared light to illuminate the eyes. A specialist camera(s) then detects this light as it bounces off the back of the eye (retina) out through the pupil. The camera also picks up the 'glint in your eye' or the reflection off the surface of the eye (cornea). Together, this data is used by the tracker system to calculate the size and position of your eyes and pupils and which direction they are moving in. Software on your computer then translates this data into analysis tools and/ or pointer control.



*myGaze tracker uses low distraction infrared illuminators and a high definition camera to detect light from your eyes.*

Eye tracking analysis can only detect fixations, what the eye focuses on, not the whole of a person's vision (e.g. it cannot detect peripheral vision). Nevertheless, this kind of tracking is thought to be important because of the link with fixations and cognitive processing (see [Assess section](#)).

Pointer control is usually achieved by your eye movement controlling where the pointer moves on screen and looking at or dwelling on a selectable area for a set length of time (measured in points of seconds) to perform a 'mouse click'. Many trackers offer the option of selection with a blink or switch/keyboard press, but in practice, these options are rarely chosen.

## Using 'Low tech' Eye Gaze

Some students are encouraged to demonstrate their competence using low or no tech eye gaze before moving on to eye gaze technology. From an early age, we naturally follow an infant's line of gaze and make interpretations and comments about what they are looking at. We frequently use this technique with our non-verbal students, however, this may not always be easy to do or provide a good long term strategy.

Eye pointing frames and boards using partner assisted scanning or colour coding with pictures or symbols can be very useful for some students. A back-up low tech communication system is always advocated as technology has been known to go wrong occasionally! They are also great for providing quick, fringe or occasional vocabulary accessible in all environments.



*A low tech eye gaze frame.*

However, when using low-tech eye gaze systems we often expect the student to learn/have the skills to make choices and be at the stage of looking to tell. The student also needs a willing and capable partner who can interpret their subtle eye movements and the nature of a low-tech system is that it remains difficult for the student to initiate any interactions.

Eye gaze technology and the computer can offer the student, who is perhaps not at the stage of intentional communication, opportunities to demonstrate skills and develop early control and interaction awareness. It can also empower other students to 'have a voice', to initiate rather than respond and to explore for themselves rather than rely on a partner's agenda. There is no real progression of skills needed to move on from low to high tech eye gaze. Both systems can work well together for an integrated approach to communication and learning.

## Frequently Asked Questions



### Can I use eye gaze on my iPad?

As yet, there are no Assistive Technology eye trackers on the market that work with Apple's Operating System, so eye trackers can only be used on Windows devices.

### Can my student control the Interactive Whiteboard with eye gaze?

Most eye trackers can control screens of up to 22", though some go a little larger. As yet, none will control the size of screen you usually use for the whole classroom (you would need to sit close to the screen for detection, but this will make it difficult to see and access the whole screen). You can, however, connect the student's eye gaze system to a secondary display for the whole class to see.

### Can I use eye gaze with students with a Visual Impairment?

It does depend on the nature and severity of the visual impairment as to how accurately the tracker detects the eyes. Eye trackers used for Assistive Technology can usually compensate for a variety of eye conditions, but not all. Some schools are beginning to use eye gaze technology with students with severe VI and cortical visual impairment for assessment and stimulation with some interesting initial results.

### Will my student with Autistic Spectrum Disorder benefit from eye gaze technology?

If a student is physically capable of accessing the computer in more standard ways, for example, using a touch screen, then this access method should be explored first. Some students with ASD however, may be unwilling/unable to point or touch a screen or cooperate with standard assessment procedures. Eye gaze can be used as a discreet assessment/interactive tool for those students reluctant to access in other ways.

### Can my child with Rett syndrome use eye gaze?

There have been many recent articles relating to using eye gaze with girls and women with Rett syndrome. Parents, teachers and therapists are finding it a useful tool for both demonstrating skills and for giving easy access to appropriate learning activities.

*"Pupils with VI really benefitted as we can understand how to support their visual needs through the analysis tools. PMLD Pupils can develop some basic skills associated with early communication skills and early development."*

**Shelagh Crossley – Deputy Headteacher, AAC Coordinator**



*Hannah playing Jigsaw Maker with just a look. She has Rett syndrome.*

# myGaze Assistive System

The new standard for easy and affordable gaze control.

NEW



# myGaze®

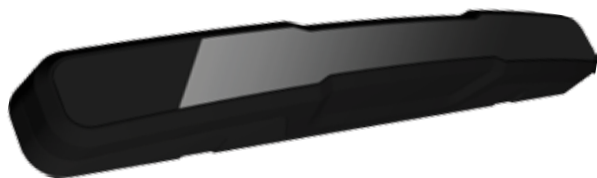


## myGaze Assistive System

myGaze Assistive, created by Visual Interaction, is gaze control of computer programs made easy and affordable. It is well suited for special needs students and their teachers as well as adults who rely on gaze for communication and environment control. No more expensive specialist support and training! With the myGaze Assistive System installed onto your desktop, laptop or tablet, you can use your gaze to do everything: explore, play games, learn, participate in classroom activities, communicate, control your PC and environment and more. Have a look at the myGaze Learning Wheel on page 4 to find out about all of your favorite activities available with myGaze.

## What's included?

### myGaze Eye Tracker



The myGaze Eye Tracker, a state of the art access device that tracks where your eyes are looking and turns that into computer control!

- Works with any assistive and mouse driven software.
- Works with all eye colors and most lighting conditions.
- Small and portable - easily transported between computers at home or school.
- Can be used across any Windows devices with 10" - 22" screens.
- A product of 20 years of research and development.

### EyeMouse Play Software

Designed for the needs of 'independent' users as well as 'supported' users and their teachers and parents:

- Intuitive "glasses" positioning guide.
- Individual profile settings for different users and devices – ideal for classroom & assessment.
- Keyboard shortcuts to change settings without disrupting current activity.
- Mouse-over-gaze precedence provides control and convenience to teachers.
- Easy on-screen 'Access Button' and 'Gaze-at-Camera' for various levels of independence and abilities.
- Rich calibration customization to cater for individuals' specific needs and interests.
- Mouse and configuration menu are fully gaze accessible.





# myGaze Assistive System

The new standard for easy and affordable gaze control.

## Who is it for?



myGaze Assistive can be used with many children and adults with conditions such as;

- Physical Difficulties.
- Communication Difficulties.
- Intellectual Difficulties.
- ALS and Multiple Sclerosis.
- Cerebral Palsy and Rett Syndrome.
- Autistic Spectrum Disorder.

## What can you do with it?

Everything you can do with a mouse! The myGaze Assistive System will follow your gaze on the screen and let you move the cursor and issue mouse commands through multiple input methods such as "dwell", "blink" and "switch".



*I've found that even a 1 point calibration enables me to access single left click 'Switch IT' type activities, Target and Touch, Chooselt! Maker activities through to grid-based communication software. I also like how you can set up keyboard shortcuts to features such as increase/decrease dwell time, pause eye gaze, and positioning guide (track status) so that these can be adjusted and fine-tuned without going in and out of the software you're using!*

Joanna Courtney - CALLScotland

The myGaze system is designed for simplicity and ease of use, suited for those new to eye gaze and for use with all levels of ability. You no longer need specialist support and training to get started. Launch one application and follow the simple 3 step guide to set up in seconds!

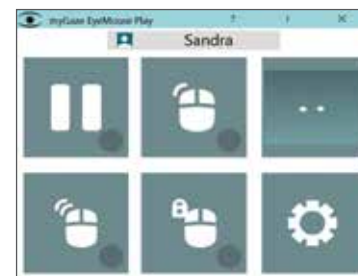
- No screen measuring or training required to use, designed to be intelligent and intuitive.
- A simple 3 step guide to position, calibrate and choose your mouse function enables you to get set up and start using in seconds.
- 0-point or an easy 1-point calibration gives great functional accuracy for users with limited attention skills.
- Also offers up to 9-point calibration for pixel accuracy.
- 98% of users never require customer support.



**Position** - use the intuitive "glasses" guide to quickly gain optimum positioning for eye gaze.



**Calibrate** - an immediate one point calibration gives great functional accuracy for most users.



**Go** - Choose the cursor function and dwell settings you want and you are ready to eye gaze!

*'Set up was incredibly easy, as is using it; we have not needed to read any instructions which is always good. ... Sally very quickly understood she was activating the program with her eyes...I can't describe the feeling we all had when we realised she could do it, it was one of those goose bump moments, we all felt it at the same time!' Carol Allen, Beacon Hill*

myGaze Assistive System

POA

For technical and more information please our website.

## Attention and Looking



**NEW**

These fun and meaningful activities can be used with all children on their first steps with eye gaze. They provide a progression of skills from experiential and cause and effect to targeting, and include customizable activities to cater for specific interests and motivations.

Powerful, but simple to use analysis and record keeping tools help you to assess initial skills and keep accurate records of progress.

### Tracking – What are you looking at?

- 'Eye-catching' activities designed to attract attention and encourage you to look at and follow images on screen.
- Assessment of eye movement patterns, visual attention, preferences and discrimination skills.
- Graded teaching of tracking skills – magic animations to encourage purposeful looking and tracking.

### Fixating – Are you looking?

- Fun and meaningful activities that provide immediate success and feedback. Use the mouse pointer to interact, paint and reveal.
- Motivating activities designed to encourage you to look and keep looking at the screen.
- Assessment of visual attention and fixation skills.
- Graded teaching of dwell click skills for single targets.

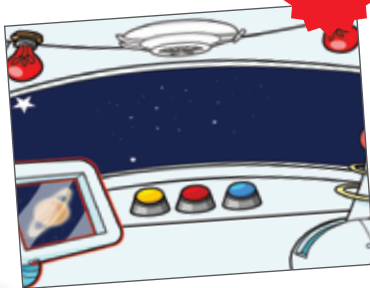
### Locating – Looking around

- Fun and meaningful activities that provide immediate success and feedback. Use the mouse pointer to interact, paint and reveal.
- Assessment of visual scanning skills and ability to use the mouse cursor to explore the screen.
- Graded teaching of using mouse cursor movement in a purposeful way.

Single User Activation Code	POA
5 User Activation Code	POA
10 User Activation Code	POA

*"We have found it a very useful tool for our eyegaze project in school. The activities are fun, engaging and the program is easy to use by all staff. By far the best feature of it is the ability to do automatic video heat map recording. This allows us to do quick assessments on a pupils ability to track, dwell and see how they are interacting with the screen ... beneficial to both assess current abilities and also to show skill progression."* **Anthony Rhys – Special Needs Teacher**

## Exploring and Playing



**NEW**

18 fun packed games and exploring opportunities to play on your own and with friends. Assess and improve your targeting and access skills and progress from cause and effect to early choice making. Learn to take turns or do just what you want. You can even make your own music machine!

### Take Turns

- Introduce concept of choosing from more than 1 item on a screen. Includes sequential, forced order and two player access.
- Develop dwell select skills of 2+ large targets.
- Teach turn taking concepts; take turns to interact, take turns to do a job, take turns to play a game.

### Explore

- A progression of easy to access targeting activities.
- Develop dwell select skills with 4 – 8+ targets and introduce select and drag access.
- Teach purposeful exploration of the screen and early control skills.

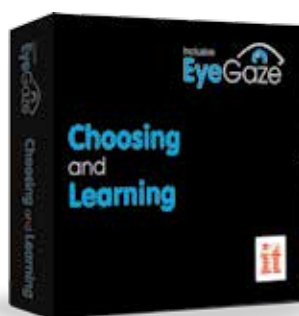
### Choose Anything

- Introduce choice making with multiple errorless choices.
- Develop and reinforce multiple target access skills.
- Teach early choice making skills and provide opportunities to express preferences in an error free environment.

Single User Activation Code	POA
5 User Activation Code	POA
10 User Activation Code	POA

*"Exploring and Playing provides further stimulating opportunities for eye gaze users to practice and develop their skills. I like the Juke Box activity that bridges into personalized choice making. The turn taking activities are important for the least independent students who tend to have very few meaningful opportunities to develop these skills. The software is intuitive and easy to use, which allows the teacher to focus on student performance rather than on making the system work."* **Andrew Walker – AAC/ICT Coordinator**

## Choosing and Learning



NEW

Prepare eye gaze users for further communication and learning activities by developing choice making and access skills. Includes 18+ motivating and meaningful activities that are designed to develop;

- Understanding of early language and learning concepts.
- Expressive skills – show preferences, give commands and express opinions.
- Accuracy of targeting, clicking and drag and drop access.
- Add your own pictures and sounds to extend the activities to your specific communication and curriculum needs.

### Preferred Choices

- Introducing a cognitive or decision making element to choosing

with easy access targets. Preparation for simple quiz access e.g. Chooselt! Maker.

- Assessment of early concept understanding and decision making abilities.
- Teaching decision making skills using early concepts and giving opportunities to show preferences with consequences.

### Linear Choices

- Introducing multiple choices presented one at a time for easy decision making. Preparation for simple book access.
- Assessment of choice making skills.
- Teaching 'scrolling' through choices and simple decision making.

### Multiple Choices

- All activities have a cognitive or decision making element to choosing with multiple targets. Including dwell click and click and drag access. Preparation for word or symbol grids access.
- Assessment of choice making skills with multiple choices.
- Teaching categorization skills and making choices to communicate and learn.

Single User Activation Code



5 User Activation Code



10 User Activation Code



Attention and Looking, Explore and Playing and Choose and Learning all feature options to personalize activities for individual students as well powerful analysis tools.

## Options



Extensive option menus allow you to;

- Personalize for assessment and teaching goals.
- Ensure success and motivation.
- Provide progressive teaching steps.

## Analytics



- **Powerful**, easy to use analysis tools allow you to record and review eye gaze skills.
- **Live video playback** of eye gaze behavior during activities.
- **Heat map recording** showing areas of concentrated gaze during activities.
- **Line trace map recording** showing path of eye gaze during activities.

## Reports



- **Instant report** and record keeping with ability to save or print out a report giving details of timings, options chosen and heat map analysis of eye gaze behavior during activities. Use for your assessment and progress records.

Buy all 3 titles  
and save!



Single User Activation Code



5 User Activation Code



10 User Activation Code





## Inclusive EyeGaze Foundations



AWARDS 2015  
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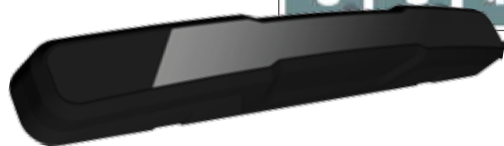
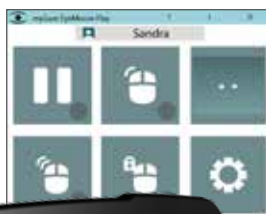
**Let your eyes take control.**  
All you need to get started with eye gaze access.

This package has been specially designed by Inclusive Technology to meet the needs of teachers, therapists and carers working with students with physical disabilities, cerebral palsy, visual impairment, intellectual difficulties, autistic spectrum disorder and communication difficulties.

### What's included?

**myGaze**

Eye Tracker and  
EyeMouse Play



Inclusive  
**EyeGaze**

Attention and Looking  
software

**Universal** - myGaze Eye Tracker works with any software.

**Affordable** - High quality and low cost for schools & families.

**Easy to Use** - Unique 3 step process takes seconds to set up for individuals. No training required.

**Portable** - Easily transported between computers in the home or at school.

**Progression** - 18 carefully graded activities designed to assess and teach early eye gaze skills.

**Analysis** - Powerful real-time video, heat map and line trace recording and printable reporting.

*"Intuitively designed and ready to go for people with a basic understanding of eye gaze technology. Engaging activities that amused the children and staff alike. The opportunity to customize pictures and music was a clear advantage and the ability to 'see' where the user was looking during the activity offered a rare insight into the mind of the user."*

**Karen Carmody – Speech and Language Therapist**

Inclusive EyeGaze Foundations 1 user



# Inclusive EyeGaze Education

NEW



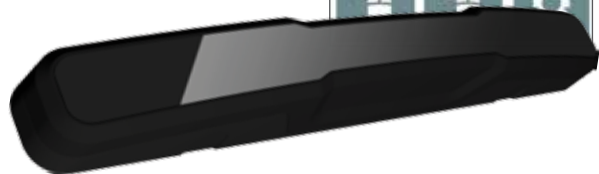
**A complete eye gaze solution for the classroom.  
From cause and effect to communication.**

Assess, Include and Engage your students with the Inclusive EyeGaze Education package. The Inclusive EyeGaze Education package includes a full set of Inclusive EyeGaze titles, Attention and Looking, Exploring and Playing, Choosing and Learning and myGaze Eye Tracker. The package includes everything you need to introduce eye gaze into the classroom for students with all levels of ability.

## What's included?

**myGaze**

Eye Tracker and  
EyeMouse Play



myGaze Assistive Gaze Technology by Visual Interaction.  
The new affordable eye tracker for a wide range of users.  
See website for more details.

Inclusive  
**EyeGaze**

Attention and Looking,  
Exploring and Playing and  
Choosing and Learning  
Software



These 54 fun and meaningful activities can be used with any child trying their first steps with eye gaze. The Inclusive Eye Gaze Software range provides a progression of skills from Cause and Effect to Communication and Learning, ensuring success and effective teaching while gathering data for teachers' analysis of the student's performance, preferences and progression.

Inclusive EyeGaze Education 1 user

POA

## HelpKidzLearn EyeGaze



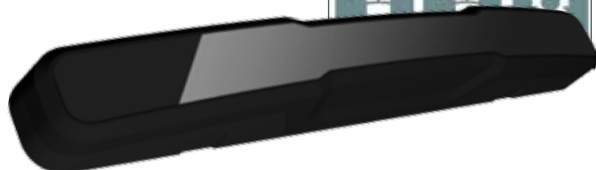
**Over 50+ online Games and Activities accessible with Eye Gaze**  
Choose from Early Years, Games, Stories, Create and Find Out Activities.

HelpKidzLearn EyeGaze has been specially designed by Inclusive Technology to meet the needs of teachers, therapists and carers working with students with physical difficulties, cerebral palsy, visual impairment, intellectual disabilities, autistic spectrum disorder and communication difficulties. If you already subscribe to HelpKidzLearn then simply purchase a myGaze Assistive System to access the activities.

### What's included?

**myGaze**

Eye Tracker and  
EyeMouse Play



myGaze Assistive Gaze Technology by Visual Interaction.  
The new affordable eye tracker for a wide range of users.  
See website for more details.

HKL EyeGaze 1 user/12mth Subs



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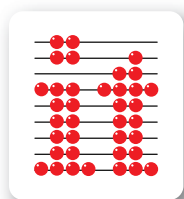
Annual fee applies to subscription only.

**HelpKidzLearn**



An extensive collection of activities that can be accessed using mouse and keyboard, switch(es), touch screen, interactive classroom displays, joy stick, roller ball and eye gaze. Ideal for children with a wide range of special educational needs and learning difficulties at a pre-literacy or early literacy level. It is also suitable for Early Years users.





# Eye Can Fly

The world's first magical flying adventure designed especially for eye gaze devices. Let Aimee guide you through 24 unique and exciting missions.



Master control of your aircraft to become a fully fledged pilot while learning Geography skills such as compass directions, landmarks and regions across the world as well as enhancing your eye gaze skills. In addition to eye gaze, play can also be controlled with any mouse pointer device, the keyboard, switches and joysticks.



## Balloon Pop!

Start simply. Pop balloons as you fly. Just look at the balloon to pop it whilst your plane flies on autopilot. What's your high score?

## Flight School

Then let Aimee guide you through twenty four exciting missions to become a fully fledged pilot whilst learning Geography skills such as compass directions, landmarks and regions across the world.

## Free Flight

You might want to just explore as you please in Free Flight. Check out the Farm, Island or World with or without a plane, choosing simple left/right control or multidirectional for advanced pilots.

## Mini Games

Team up with the chicken to collect coins and pile up points. Race Aimee and explore the island on foot, uncovering hidden surprises. Your eye gaze adventure starts here.

## Accessible

Designed for students with some experience of eye gaze control and ability to follow simple verbal instructions, this package is easy to set up and takes the students through carefully graded activities to learn how to use eye gaze with precision and control. Useful options and a range of activities at different levels ensure success and maintain motivation for students of different ages and abilities.

*"Compared to other "special needs" software Eye Can Fly stands out in appearance, characterization, soundtrack and challenge, making it appealing to a variety of ages and abilities. This is a game package that the whole family would want to experience, not just the disabled player."*

Sean Carroll – ICT/AT Consultant

*"Eye Can Fly is a much needed addition to the EyeGaze repertoire. The graphics and interface are clear and well designed. The activities are purposeful and fun. My students have adapted to them very quickly and there are many options for them to explore in the future. I have particularly enjoyed seeing my least independent students experiencing what it's like (well nearly) to be as free as a bird!"*

Andrew Walker – AAC/ICT Coordinator

Single User Activation Code

POA

5 User Activation Code

POA

10 User Activation Code

POA

## Look to Learn



*Look to Learn* is a package of forty activities designed for those starting out with eye gaze technology. Each activity develops a different skill, ranging from early cause and effect through to accurate eye gaze control.

The forty activities are relevant to five key areas of learning and development:

- **Sensory** - teaches cause and effect.
- **Explore** - encourages engagement with the whole screen.
- **Target** - helps improve accuracy of eye gaze access.
- **Choose** - develops choice making skills.
- **Control** - improve eye gaze control.

Look to Learn single user licence



POA

## Grid 3



You can do so much more with *Grid 3*. There are new tools and features to make saying what you want, accessing your computer and controlling your environment easier than ever before. There are new ways to do everything, from symbolised email and SMS to Chat History and SwiftKey technology that make saying what you want to say quicker and easier than ever before. Creating and personalising resources is so simple and intuitive. You can achieve everything within only a few clicks and it is quicker than ever to make changes on the go using the touch-friendly interface. *Grid 3* is a complete solution that is designed to work for everyone. The software is split into six areas that provide all the tools you need, from symbol and text communication to computer and environment control. Accessible Apps in *Grid 3* enable you to browse the web, use social media and much more. There are grid sets for everything, from making a phone call, sending a text or emailing a photo.

Grid 3 1-4 licences each

POA

## Look to Learn Scenes & Sounds



A collection of twenty six activities designed for children and adults starting out with eye gaze. Available as an expansion pack for *Look to Learn*, this software focuses on interactive scenes, music and sound as well as eye gaze skills activities. You can add *Scenes & Sounds* to your existing *Look to Learn* licence or purchase both software titles together.

Scenes & Sounds single user licence

POA

## ii-Music



A musical instrument that you can play with your eyes. With a range of high quality musical instruments, sound effects and the ability to record your performances, *ii-Music* gives you free reign to express yourself musically, in real-time. *ii-Music* operates using cursor position and "dwell to click" meaning that you can use it with almost any eye gaze or head tracking system. No need to read music or memorise scales to give this a go - all you need is a love of music. The software is also compatible with The Skoog, so you can also use the software to enhance your performance by changing notes or adding effects on the fly.

### Features

- Control a cursor controlled instrument or use with a Skoog.
- 10+ physical modelling instruments.
- Digital effects - fuzz, echo, phasor, reverb.
- Built in effects presets.
- Record your performance.
- Adjustable notes and scales.
- Customisable sensitivity and user settings.

ii-Music single user licence

POA

## Hardware

### myGaze Eye Tracker

myGaze Assistive System



POA

☐

## Software

### Attention and Looking

Single User Activation Code



POA

☐

5 User Activation Code



POA

☐

10 User Activation Code



POA

☐

### Exploring and Playing

Single User Activation Code



POA

☐

5 User Activation Code



POA

☐

10 User Activation Code



POA

☐

### Choosing and Learning

Single User Activation Code



POA

☐

5 User Activation Code



POA

☐

10 User Activation Code



POA

☐

### Inclusive Eye Gaze Learning Curve

Single User Activation Code



POA

☐

5 User Activation Code



POA

☐

10 User Activation Code



POA

☐

### Eye Can Fly

Single User Activation Code



POA

☐

5 User Activation Code



POA

☐

10 User Activation Code



POA

☐

### Look to Learn and Scenes & Sounds

Look to Learn single user licence



POA

☐

Scenes &amp; Sounds single user licence



POA

☐

### Grid 3

Grid 3 - 1-4 licences each



POA

☐

### ii-Music

ii-Music single user licence



POA

☐

## Bundles

### Inclusive EyeGaze Foundations

Inclusive EyeGaze Foundations 1 user



POA

☐

### Inclusive EyeGaze Education

Inclusive EyeGaze Education 1 user



POA

☐

### HelpKidzLearn EyeGaze

HKL EyeGaze 1 user/12mth Subs



POA

☐

**HelpKidzLearn**

For further  
information  
please visit  
our website



# Inclusive **EyeGaze Education**



**A complete eye gaze solution for the classroom**  
**From cause and effect to communication**

**The Inclusive EyeGaze Education package includes;**

- myGaze Assistive Eye Tracker
- Attention and Looking
- Exploring and Playing
- Choosing and Learning

**Everything you need to introduce eye gaze into the classroom for students at all levels of ability.**

**NEW!**  
See page 35

**HelpKidzLearn**

**HelpKidzLearn**  
[www.helpkidzlearn.com](http://www.helpkidzlearn.com)

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