Implementing Eye Gaze Technology & Communication for Emerging Communicator

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Agenda

• Eye Tracking
• Calibration and introducing access
• Overview of Communication Supports and tools
  • Gaze Viewer
  • Look to Learn
  • Communicator 5
  • Snap Scene
  • Snap + Core First
• Teaching Access Skills
How the Eye Works

Good to Know

Focus area
Saccade
Eye control practice can take minutes, hours, or days to show potential. It depends on the individual.

Time alone is different to time spent being monitored or when trying to engage in communication.

Create moments for self exploration and moments for engaged communication.

Limit frustration in the beginning with no fail activities for all our eye gazers.

Eye Tracking

It's not such a mystery
Eye tracking Overview

Illuminators
- These are near infrared lights that are pointed towards the eyes
- The illuminators are in the eye tracking bar
- They create "glints" or reflections of light on your pupil or iris depending on where your eyes are looking.
- It’s the position of those glints that are measured by the cameras.
Eye tracking

Cameras:
- Cameras collect the image and reflections of the eyes
- The cameras locate the position of the person’s eyes within the track box.
- A camera registers these reflections and through filtering and calculations can see where you are looking on the screen.
- Our track box is larger than any other eye trackers on the market.

Processing Chip
- The processing chip interprets the data it receives and calculates where the user is looking at on the screen.
- Tobii Dynavox has created their own patented 3D model of the human eye.
- Sensors and eye tracking methods work toward precise calibrations in dark, dim, and bright environments.
Eye Tracking
What’s important

• Positioning
• Track box size
• Calibration
Eye Tracking

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Getting Started

- Emergent Communicator is:
  - A communicator who is not yet using symbols intentionally to communicate.
  - They may be using behaviors as their main mode of communication.
  - A familiar communication partner is often important for the success of communicating intents.
More Needs / More Solutions

• By introducing higher tech solutions we create more opportunities and paths to achieve optimal accessibility for communication and language learning.
• Using high tech solutions delivers greater independence in learning.
• Higher tech provide the individual a chance to build a foundation to achieve higher level skills.

Gaze Viewer
Gaze Viewer

• Assess:
  • Can the user see the screen and access all areas of the screen?

• Understand:
  • What are they seeing and what are their preferences.
  • What gets their attention?

• Report:
  • Save eye tracking data as images or videos.
  • Shows heat maps and gaze plots.
  • Use as data to report an individual’s current abilities.
  • Shows how they develop over time.

Assessment tool with many uses

There are virtually limitless applications for Gaze Viewer:
• Comprehension testing
• Cognitive/processing delay assessments
• Low pressure testing environments for children
• Validating potential of an eye tracking as access method.
Teaching Language and Access for Emergent Eye Gaze Users

Teaching Strategies

- Think aloud
- Teachable moments over long sessions
- Use the pause button
Screen Engagement Games

http://www.tobiidynavox.com/eyegames/

Eye - FX

- Explore cause and effect
- Learning target, track and dwell
- Developing control and accuracy
- Enhancing precision and timing
- Exploring dwell function
Look to Learn

- Screen Engagement/Exploration
- Targeting of items
- Targeting of items for choice making
- Sustained targeting and controlled aim

Communicator 5

- Provides a simple homepage that allows for easy workflow and navigation
- Provides pagesets, for literate, symbol and emerging communicators
- A range of content for emerging communicators
- Emergent Games
- Emergent communication
- Beginning Eye Gaze Users
Communicator 5

- Edit existing page sets
- Create fun motivating activities
- Support curriculum and new learning

Snap Scene

- Create a visual scene
  - Categorize
  - Provide space
  - Create Context
Snap Scene

- Visual Scene Displays (VSDs)
  - Photos of naturally occurring events/scenes
  - Good for emergent communicators that require concepts embedded within scenes and events to provide context.

“Young children represented these language concepts in very different ways than traditional AAC symbols – Embedded the concepts within context – Typically included depictions of entire scenes or events – Usually included familiar people, objects and experiences – Seldom included parts of objects or people in their representations”

- (Light, et al., 2010)
Snap Scene

- VSD best practices
- People in central foreground
- Capture motivating events
- Large hotspots
- Familiar social interactions

Snap + Core First

- Utilizes a core word vocabulary approach to communication.
- Robust communication system with multiple communication tools.
- Core words
- Quick Fires
- Topics
- Keyboards
Snap + Core First

- What is Core Vocabulary?
- Limited set of highly useful words
- Words that apply across a variety of settings
- Very few nouns, primarily function words
- Comprise 80% of words used in both spoken and written language

(Witkowski & Baker, 2012)

Snap + Core First

Dr. Karen Erikson et al at UNC Chapel Hill
- AAC Core vs Academic Core
- Response to Common Core State Standards
- Guided Snap + Core First development in how core words were introduced

www.med.unc.edu/ahs/childs/files/vocabulary-overview
www.project-core.com/about-project-core/
Snap + Core First

• Why is it important to introduce core vocabulary to an emergent communicator?

Improved Outcomes

Engagement

Growth

Literacy
Snap + Core First

• A few core words can be used in a variety of personally motivating activities
• Core is less cognitive demanding for the communicator
• At early stages of use, there is no right or wrong time to use core

Snap + Core First

• Core vocabulary is also 80% of what we read and write
• Providing exposure to core early on helps our emergent communicators be more successful later
Snap + Core First

- You can begin with one button and plan for potential and growth by easily introducing more vocabulary when ready.

Engagement

Growth

Literacy

Snap + Core First

Size based growth

![Snap + Core First Size based growth](image_url)
Snap + Core First

Location based growth

Snap + Core First Supported Navigation
Snap + Core First Supported Navigation

- Designed to be used with emergent communicators of any age, and supported by their communication partner.

- The Supported Navigation page grid size will provide the communication partner with access to full range of communication tools.
Partner Strategies for Teaching Access and Language
Partner Strategies

- **Balance**: Balance motor and cognitive demands
- **Cognitive**: Keep cognitive demands low
- **Motor**: Focus on motor function then increase cog demands
- **Opportunities**: Create opportunities

Eye Gaze Pathway

Eye Gaze Pathway Overview

A quick-start guide into the world of eye-gaze
Communication & learning right from the start
Each step has videos, activities, games & tips
We recommend starting at Screen Engagement!

Eye Gaze Pathway
Communication and Learning with Eye Gaze

Screen Engagement | Responding | Exploring | Targeting | Choosing | Full Control

7/4/2019
Unlocking Abilities: Keys to Developing Eye Gaze Skills

Key 1: Experimental Learning

Key 2: Making Something Happen

Key 3: Mastering Skills for Access: Eye Gaze Skills

Key 3a: Targeting

Key 3b: Dwelling

Key 4: Choosing Independently

Key 4a: Failure free choosing

Key 4b: Finding the right one

Key 5: Independently accessing a range of functional activities

Questions?

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References


