



PROVAIL

LIFE OPPORTUNITIES FOR PEOPLE WITH DISABILITIES



Every one of us has the right to pursue the life we choose to live.

Background

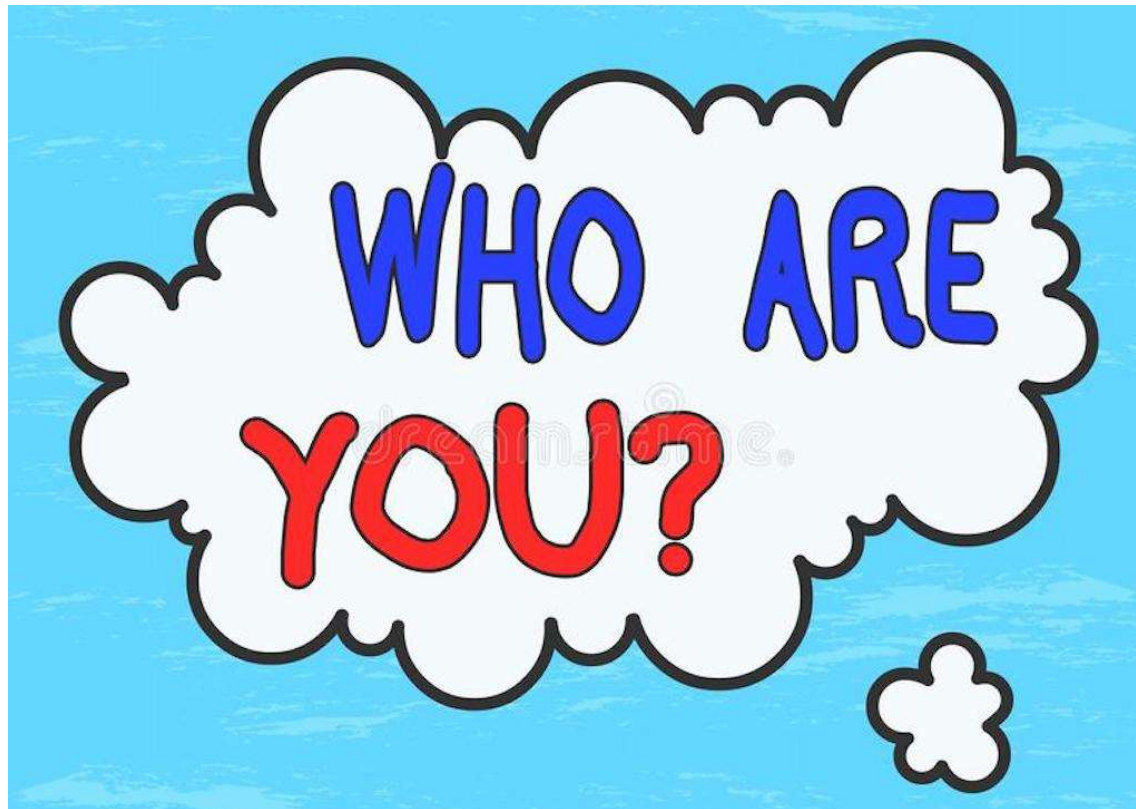
- **Individuals who have complex communication needs and physical or sensory challenges require access to assistive technology for meeting communication, academic and daily living needs.**
- **Access can be complicated**
- **Children who experience repeated failure with limited environmental control can develop learned helplessness (Swinth, Anson & Deitz (1993)).**
- **Adults who had access to leisure activities and community improved their physical health, enjoyment, mental health with increased independence, enhanced social network and education. (Datillo et al., 2008)**
- **Independent SGD use for communication requires frequent opportunities to practice across a range of interactive, supportive and authentic learning environments. (Beauchamp, Bourke-Taylor & Brown, 2018).**



A little about me

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Today's participants



Research

- **Learners who use switches normally face a more challenging task than peers who are physically able to directly select**

(Vanderheiden G. 1976; Harris D. & Vanderheiden G. 1980; McDonald E. 1980; Harris D. 1982; Shane H., Lipschultz R., & Shane C. 1982; Saya M., Pelikan Y., & Barr L. 1984; Vanderheiden G. 1984; Gunderson J. 1985; Vanderheiden G. & Lloyd L. 1986; Blackstone S. 1989; Light J. 1989; Fried-Oken M., Howard J., & Stewart S. 1991; Ratcliff A. 1994; Whittle H. & Townend S. 1995).

Objectives

- Identify possible switch sites and considerations
- Identify factors that influence switch access
- Identify ways to motivate and engage
- Understand Partner assisted scanning as it relates to overall communication
- List at least one errorless communication activity

Main objective: Have fun



Abi



OT and PT



What is a switch?

- A switch is a device that enables an individual experiencing a learning difficulty and/or a physical disability to operate something through a single action.

Successful interactions

- Establish trust
- Have confidence
- Errorless activities
- Take turns
- Reinforce attempts
- Find out what is motivating
- Be enthusiastic

What influences switch learning

- Age of learner
- Interests
- Physical skills
- Cognitive skills
- Vision
- Hearing

Stages of switch learning

- Stage 1 Cause & Effect
- Stage 2 Errorless Scanning
- Stage 3 Supported Participation Scanning
- Stage 4 Independent Participation Scanning

Activity determination

- Age appropriate
- Meaningful
- Motivating
- Engaging
- Low cognitive load initially
- Movements reinforced related to switch use

Bowling Activity



Active participation and Motivation

- Motor success
- Appropriate feedback
- Preferences
- Connections
- Consider parallel learning (Goosens & Crain, 1992.) ,use nontech, aided language as well as high tech to develop communicative competence.

Caleb: motivation



Catapult



Selection site starting point

- **DIAGNOSIS:** related motor abilities and challenges.
- **OBSERVE:** watch how child moves
- **ASK:** Parents/supports about movements
- **TRIALS:** Try various switch placements

Selection site considerations

- Trialing different areas on body
- Might need a few options
- Multiple switch sites: 2 switch access option
- Asking client
- Positioning issues
- Does not increase tone
- Does not cause fatigue
- Does not elicit abnormal reflexes

Examples of switch sites

- HAND
- HEAD
- KNEE
- EYE
- FOOT

Switch features

- Type/activation methods
- Sensitivity/force
- Size
- Feedback
- Durability (moisture, cords)
- Safety(placement issues)
- Mounting

Switch type considerations: Mechanical

Size: depends on movement to activate

The smaller the movement, the smaller the switch



Shape: dependent on body part used to activate

Activation force: dependent on strength and tone

Auditory feedback: to let you know when activation occurs(not good for continual activation)

Wireless vs wired: cords tangled in equipment or hands

Activation with air: grasp or puff/sip

Multiswitches: 2-5 arranged or joystick shape

Switch type considerations: Electrical

Require power source

Used when difficulty with activation force

No requirement to press

Examples: proximity , infrared, fiber-optic



Kaela: Blink switch



Forrest: Proximity switch



Switch access = opportunity

Switches can operate everything

Even the tiniest muscle movement, such as an eye blink, can activate an electronic switch of some type.

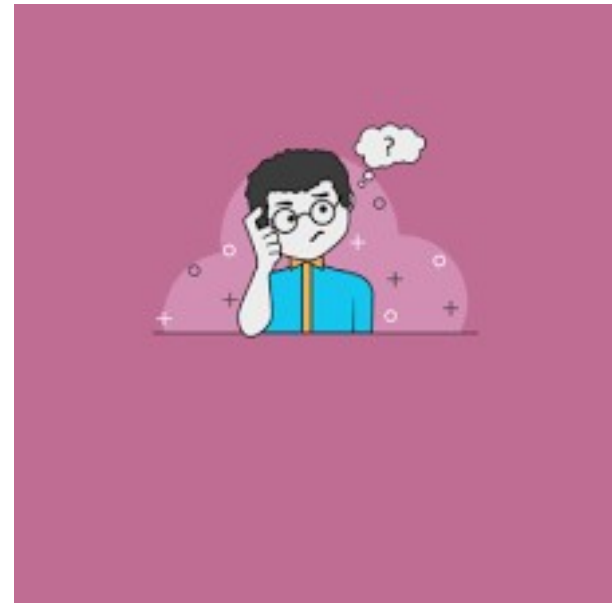
Switch access can provide opportunities for active participation, interaction, and control

How do we start?

- **Learner interaction:** Novice Learners will likely have little or no awareness of what a switch is or what it can do.
- **Switch awareness:** develop an awareness of and a tolerance for the chosen switch
- **Switch accessibility:** require some physical effort and control over some part of the Learner's body.

Keep in mind: direct/indirect

- Direct selection
 - Faster
 - Less cognitive load
 - Requires more motor control
- Indirect
 - Slower
 - More cognitive load
 - Less motor control



Scanning activation

- Timed activation (auto/inverse scan)
- Non timed activation(2 switch step scanning)
- Can't assume the perfect switch site
- Exploration of multiple switch sites is necessary to get to 2 switch use

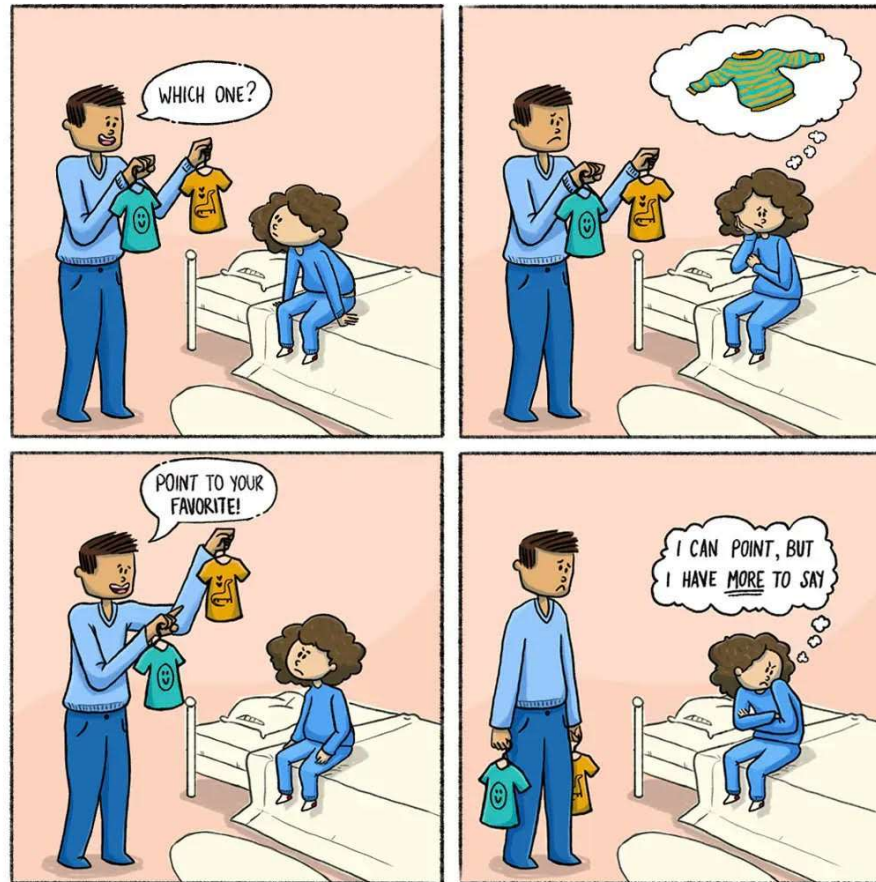
Aided language and Partner assisted scan

- Operated by smart partner
- Communication book, board
- Auditory/visual /tactile choices presented
- Used to model pragmatics, language structures, access methods, and communicative competencies in natural context. (Beauchamp et al., 2018; L Burkhardt & Porter, 2010).

Partner assisted scan. A closer look

- Teaching Partner scan
- Establishing a yes/no
- Establishing a readable yes
- Using the SGD with PAS
- Implementing scan groups with PAS on device: visual cues

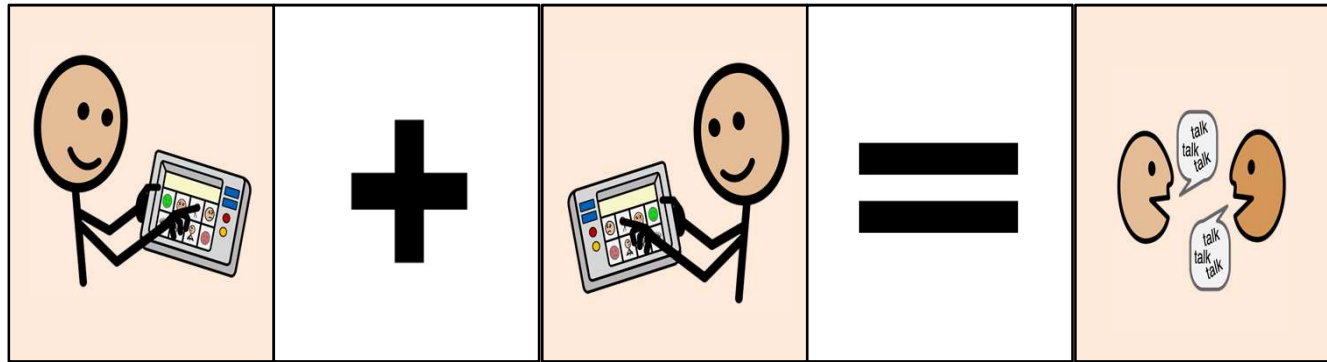
More to say



#MoreToSay

AssistiveWare

Model Model Model





200 opportunities: The Experts

Research indicates that we need to provide at least 200 opportunities each day for aac users to become effective communication system users.

- **Goosens, Crain and Elder “Importance of engineering the environment”**

Goosens, Carol, Crain, Sharon and Elder, Pamela. Engineering the preschool Environment for interactive Symbolic Communication(Revised) Birmingham,Al: Southeast Augmentative Communication conference Publications Clinician Series. 1994.

- **Beukleman and Miranda “Participation model”**

Beukelman, David and Mirenda, Pat Augmentative and alternative communication for children and adults(Third Edition). Baltimore, MD: Paul H. Brookes Publishing Co. 2005.

- **Sarah Blackstone “Social networks”**

Blackstone, Sarah and Hunt Berg, Mary. Social Networks: A Communication Inventory for individuals with Complex Communication Needs and their Communication Partners. Monterey CA; Augmentative-Communication Inc., 2003

- **Musselwhite and King-Debaun “ Social scripts”**

Musslewhite, Caroline and Burkhart, Linda. Can We Chat? Co-Planned Sequenced Social Scripts. Ramsey and Burkhart, 2001.

- **Janice Light “ Building social competence”**

Light,Janice and Binger, Cathy. Building Communicative Competence with Individuals Who Use Augmentative and Alternative Communication. Baltimore, MD: Paul H. Brooks Publishing Co, 1998.



Teaching yes/no

Explicit motor practice for head nods. Practice the movements together.

- Lots of verbal referencing when we notice the learner is moving their head.
- Lots of "failure-free" opportunities to practice head nods.
- Lots of head nods with verbal referencing: "I'm moving my head from side to side, I'm saying no."



Switches: yes/no for choice



AAC in action



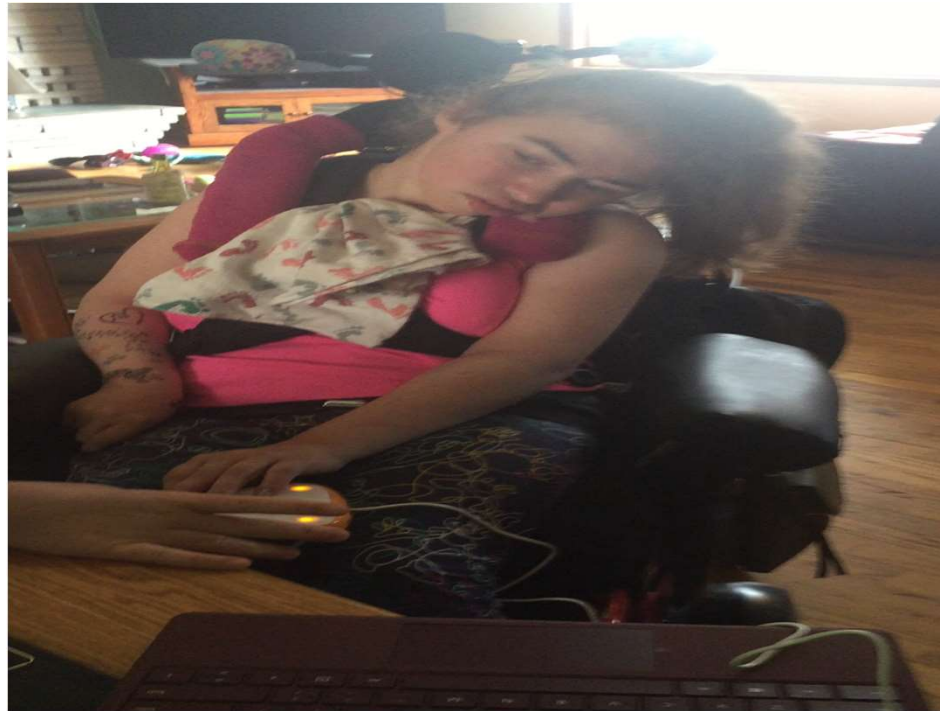
Yes/no considerations (mover, selector)

- Do they need yes programmed?
- Placement of that's the one I want
- Placement of no not that, keep moving, more choices
- Color coding
- Consistency
- Readability

Single switch : cause and effect

- Learning occurs from experiencing not prompts and direct teaching.
- Active participation reduces learned helplessness.
- Using already established movements
- Examples: music, short phrases on sequencer, battery toys

Soccer



Check in: What did you see?

- Motivator
- Partner
- Activity
- Type of effort
- Supports

How does this activity relate to access to communication?

Feeding Chickens



Check in: What did you see?

- Motivator
- Partner
- Activity
- Type of effort
- Supports

How does this activity relate to access to communication?

Single switch: multiple locations and functions

- Different purpose for switch
- Different part of body
- Engage in decision of site
- 2 part outcome: activate a toy to knock down blocks, Co-planned Sequenced social scripts(Musselwhite & Burkhart, 2001)

Introducing 2 switches

- Requires more cognitive engagement , discrimination and problem solving.
- Examples: toy and voice output, power chair turn right and left, Spinner with phrases
- Mover and selector: AAC
- Errorless fun
- Modeling move, that's the one

Switch Access considerations for AAC

- Switch systems remain flexible to match the user's needs.
- A typical user would tend to move through a series of different control methods as they mature and develop. Their control may improve or deteriorate.
- Some people will improve in either speed and/or method with practice and opportunities.

Other scanning considerations

- Scan type
- Scan timing parameters
- Color coding
- Auditory previews
- Integration with power wheelchair

Scanning types

- **Simple scan**
- **Group scan**
- **Directed scan**
- **Auto scan**
- **Step Scan**

Color coding/visual considerations

- Groups color coded
- Background contrast
- Outline of button color highlighting or coded

Auditory preview considerations

- Different voice
- Private preview
- Partner listening to headphone
- Speaker preview
- Shortened to avoiding interfering with scan timing
- Group name previews

Wheelchair /switch access considerations

- Can we use head array
- Can they use power chair and switches for device
- Does device need to be positioned differently for safety while driving
- Can we use auditory previews if in the way of driving

Timing parameters for SGD

- **Scan time:** This is the time it takes for the highlight to move from one object (group or item) to the next.
- **Initial scan time:** When the scan starts at the top of the selection set it is often useful to some users to have an extra delay before the scan moves to the first item
- **Scan pause:** It can be beneficial to allow users to collect their thoughts before the next stage of the scan. A delay between pages/groups may aid some users in this.
- **Acceptance time:** the time the switch must be held down for before the system recognizes the switch action
- **Release time:** the time the user must be away from the switch before another selection is registered.

Scripting and Co-Construction for SGD

- Co-construction during aided conversations serves multiple functions : – Scaffolding use of aided AAC – Eliciting information – Maintaining narrative and conversational flow – Assisting message formation – Clarifying information – Confirming information
- Co-construction has been found to contribute to increased communication competence and positive communication partner collaboration.
- Social scripts (e.g., joke-telling, chit chat, ordering fast food) and life stories (e.g., what happened at camp, our funny cooking) offer powerful opportunities to connect with others
- Having pre-programmed sentences can be very important when interacting with unfamiliar communication partners in community locations.

Programming considerations

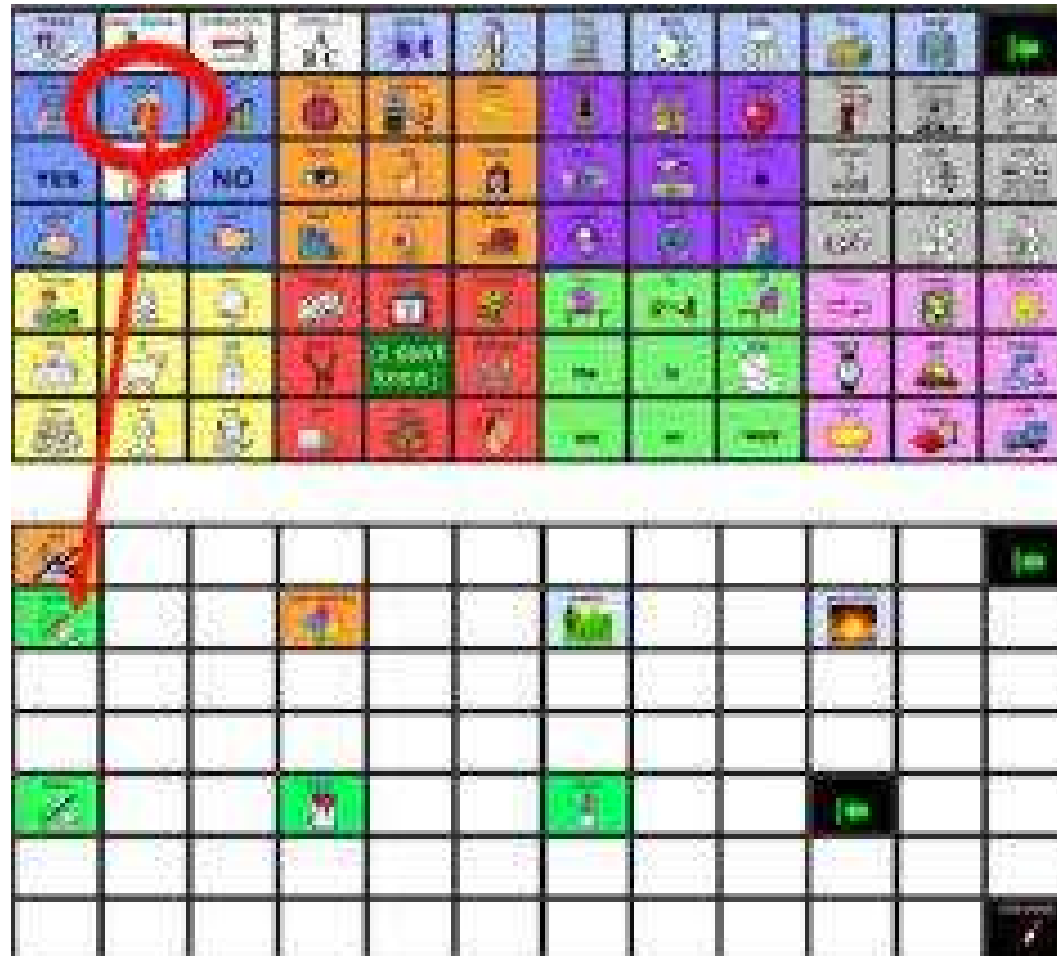
- Custom scan layout
- Up a level
- Scan next
- Differentiated previews
- Number of words for preview
- Do not interrupt
- Scripted step by step programming

Links and Navigation

- Adding links to all pages

- Navigation ease

PRC : Core Scanner



Tdsnap scanning groups named and organized

TD Snap

— □ ×

Group 1 Draw the areas you want in this group Done

Speak		Clear	Delete	Chat	Copy to Button	Share			
Back	I	we	want	is	tell	need	not	an	
QuickFires	you	my	like	can	take	know	more	@	
Core Words	it	our	go	stop	think	come	a	because	
Topics	he	they	have	do	see	let	&	and	but
Keyboard	she	them	will	get	say	feel	the	for	
Dashboard	us	+ People	help	put	find	+ Actions	that	to	
Current Boardmaker activity	what	who	why	all	some	All Word Lists	Personal	Choose a word list to link 1	
Pause Disabled	where	when	how	none	here	Descriptions	Little Words	!?' Punctuation	
Word Forms	which	could	+ Questions	there	later	Date & Time	Choose a word list to link 2	ABC ABB ABB Word Forms	

Group: ● ● ● ● ● ● + | People Stay in group Off

Grid 3 Audio highlighting, scan blocks

The top screenshot shows the 'Grid 3 - WHITNEY (2) - Feelings' window. It features a menu bar with 'Home', 'Style', 'Layout', and 'Grid'. The 'Grid' menu is open, showing options like 'Finish Editing', 'Undo', 'Background', 'Grid', 'Scan Blocks', and 'Audio Highlighting'. The main area displays a grid of 6 columns and 5 rows of icons representing various feelings. The 'Audio highlighting' sidebar on the left includes a speaker icon and a 'Preview' button.

	1st column	2nd column	3rd column	4th column	5th column	6th column
back, I you someone else, have seizure	Back	I	you	Someone else	have seizure	
physical feelings	sick	hurt	cold	hot	itchy	tired
good feelings	happy	excited	good	fabulous	Silly	great
bad feelings	bad	frustrated	sad	mad	nervous	upset
neutral feelings or something else	bored	OK	Crazy	so so	Surprised	Something else

The bottom screenshot shows the 'Grid 3 Remote Editing - Super Core 30 - 17a MESSAGES index' window. It has a similar menu bar. The 'Grid' menu is open, showing 'Scan Blocks' selected. The main area displays a grid of 6 columns and 7 rows of icons representing various actions and questions. The 'Scan blocks' sidebar on the left lists 'Scan Block 1' through 'Scan Block 8' and includes a 'Scan block audio highlighting' section with a speaker icon and 'Preview' button.

	1st column	2nd column	3rd column	4th column	5th column	6th column	
	jump home	jump back	rest	write chat sentences here.	speak	clear	
	something is wrong	I want to go	yes	what's that?	not what I meant	my name	your name?
	I need help	let's go	I don't know	ask a question	more time	I live	you live?
	it's important	go away	no	yes or no	don't understand	I am ...years old	your birthday?
	help	go	say	ask	fix	me	you

Communicator: scan groups

The image shows a Zoom window with a virtual keyboard interface. The window title bar includes "Zoom" and "judy categories - [sp...". The interface features a text input field at the top containing "Aida is coming back". Below the text field are several buttons: "Main page" (green), "Backspace" (yellow), "PHRASES" (orange), and "Email" (purple). The keyboard is organized into rows of buttons:

- Row 1: Names: Moses, Harlow, Donna, Kaye, Gabe, Aida
- Row 2: Names: Emily, Jane, Rebecca Olson, Mom, Scott, Missy
- Row 3: Words: to, ., for, from, on
- Row 4: Words: , , in, and, home, an upward-pointing red arrow, Delete Word
- Row 5: Alphabet: ABCDE, FGHIJ, KLMNO, PQRST, UVWXYZ
- Row 6: Symbols: 1 2 3, .?! SHIFT, SPACE, EDIT, CLEAR

The interface is set against a pink background. A small video thumbnail for "Donna Cole" is visible in the top right corner of the Zoom window.

Communicator : Up a level

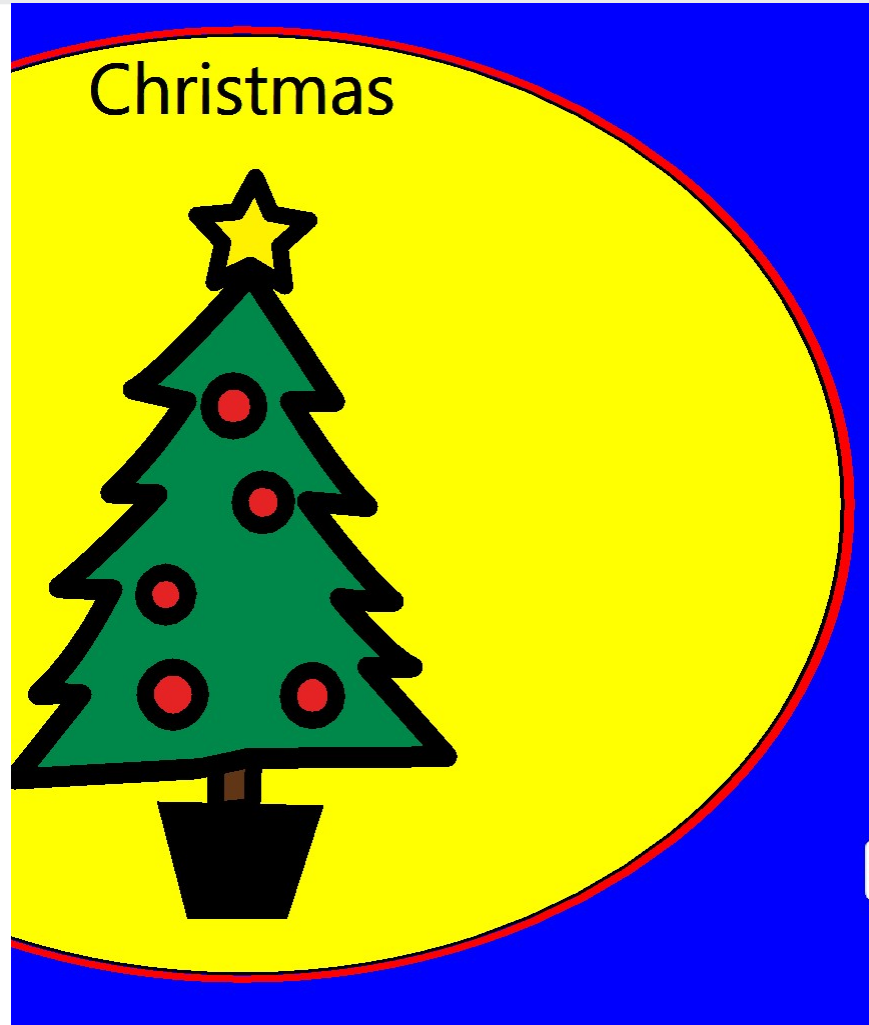


Communicator: errorless scanning

Donna Cole Wilson

Back	Main	Talk about Christmas	I love making Christmas cookies
I love driving around and looking at the lights	I love having my lights up	I love putting our Christmas tree up	Make sure you don't lose your keys during the holidays
Drinks are very good	Do you still have your tree up?	Do you like Christmas lights on your house?	Do you like to drive around and see Christmas lights?
What is your favorite Christmas show?	I love the, Elf and the Grinch who stole Christmas	What kind of things do you like to bake at the holidays.	Little Drummer Boy

Communicator: Christmas script



Communicator: Scan/touch available for PAS or modeling

scan touch

Clear

. I have something to say

. help

. Word Power or SnapCore

. Camera

. hi and bye

Updates on news

. want

. go

. people and pets

. videos

. Google, Siri, Echo, Zoom

. work

. email

. schedule

. Reading and stories

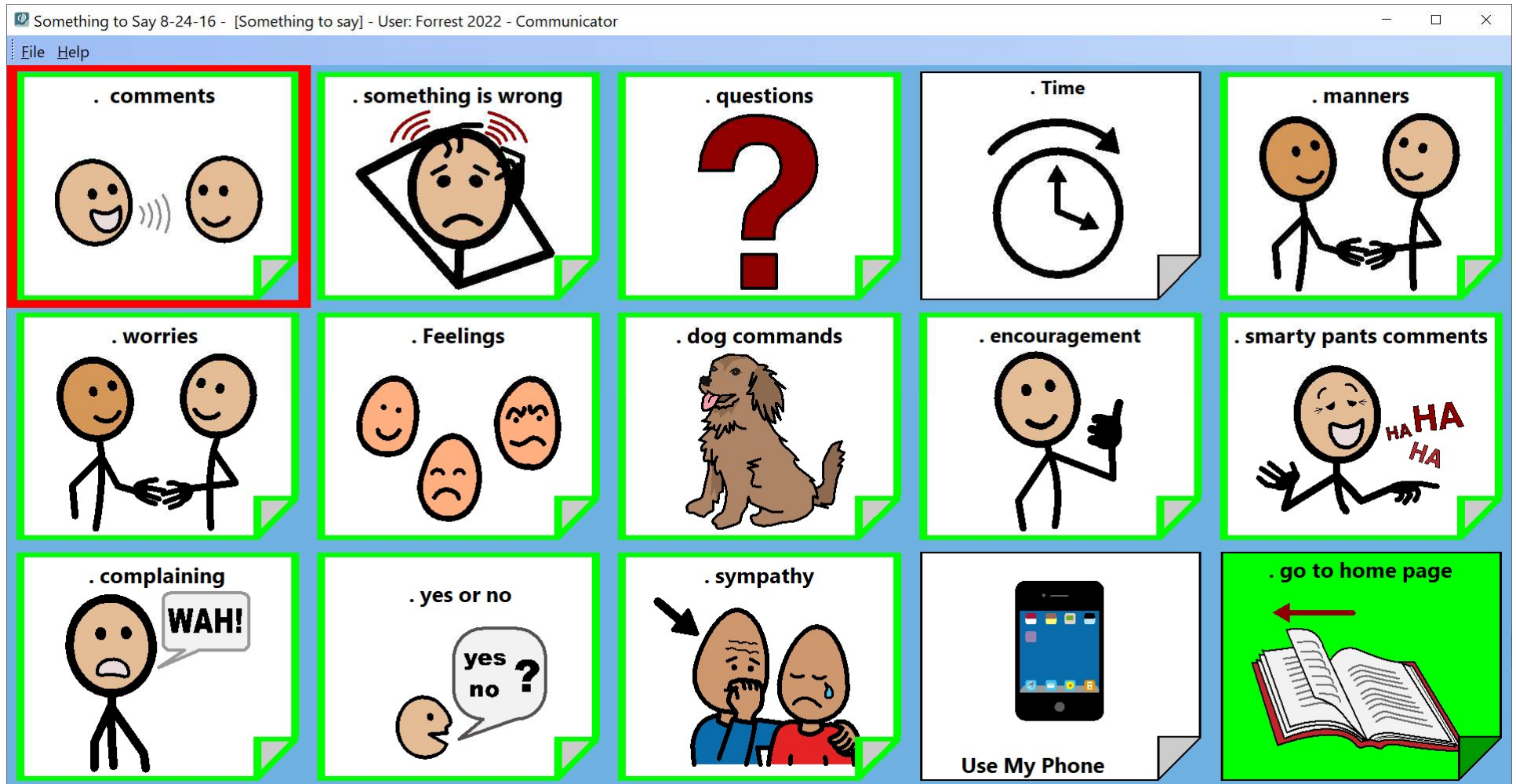
. Jokes

I don't want to talk right now

CALENDAR

JAN	FEB	MAR
APR	MAY	JUN
JUL	AUG	SEP
OCT	NOV	DEC

Communicator: Pages available across contexts



iOS apps and scanning

- Proloquo
- TouchChatHD
- Grid
- Lamp
- Tdsnap
- Predictable

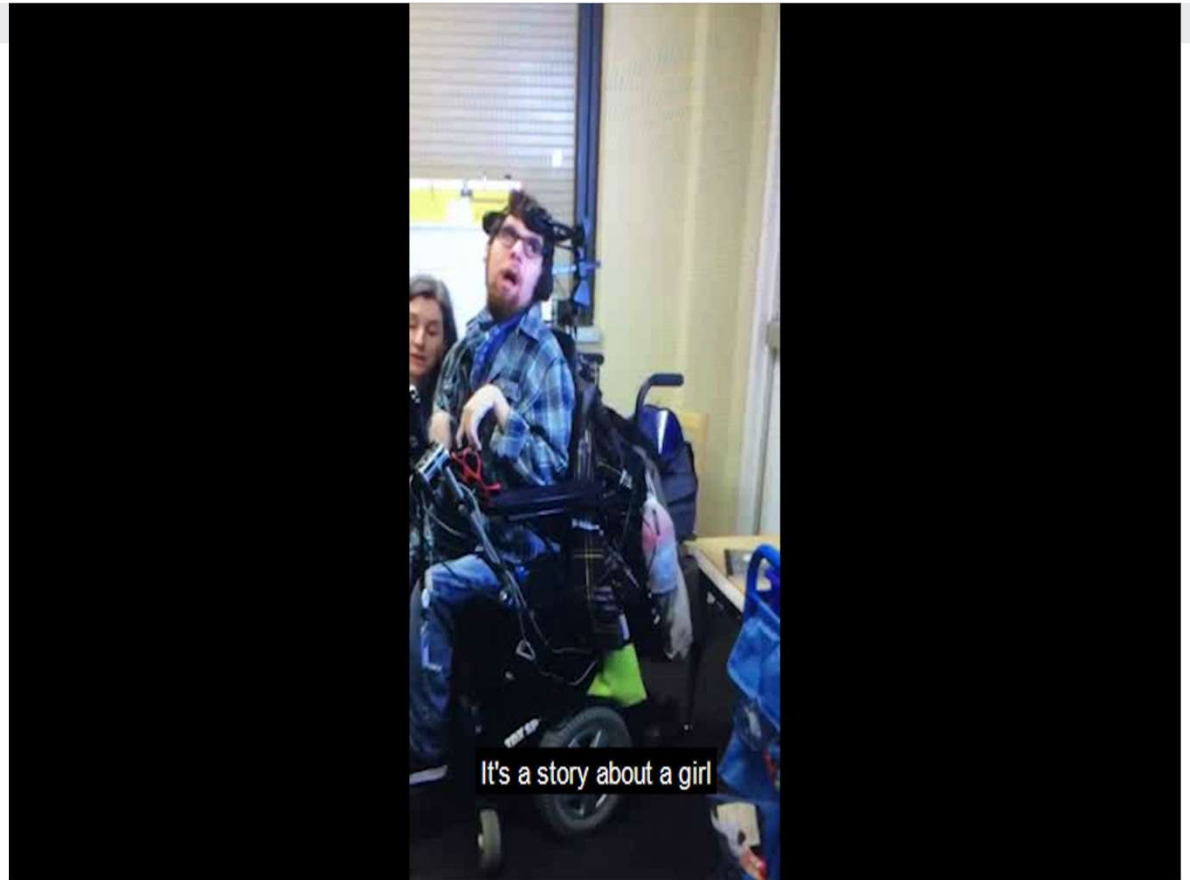
Alex's journey

The Beginning: Step by step
The Present: Tobii with
auditory scanning custom
pages

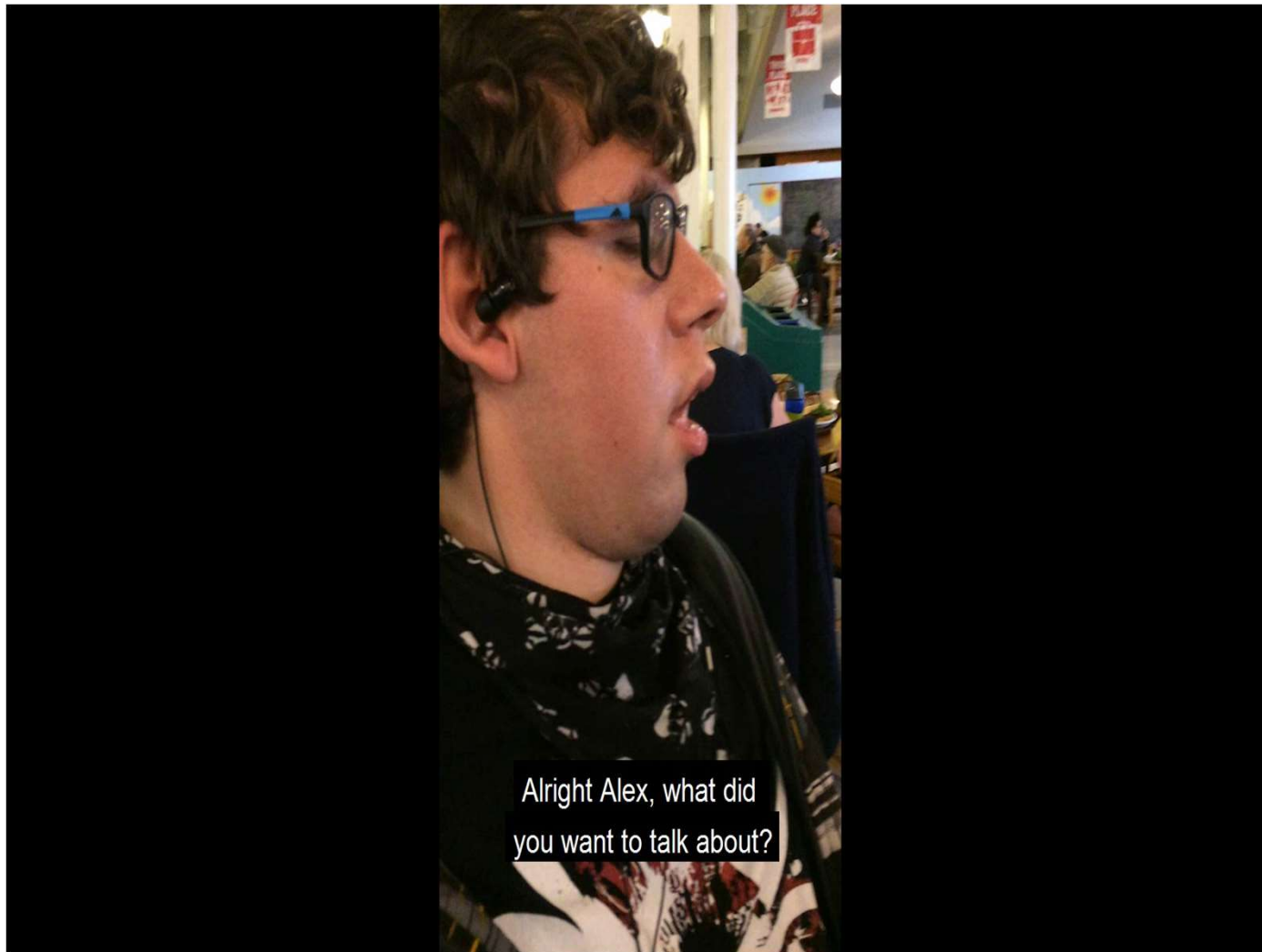
Connecting to community:
Email, reading books,
scripting social sequences,
telling jokes, Bible school



Alex reading at a preschool



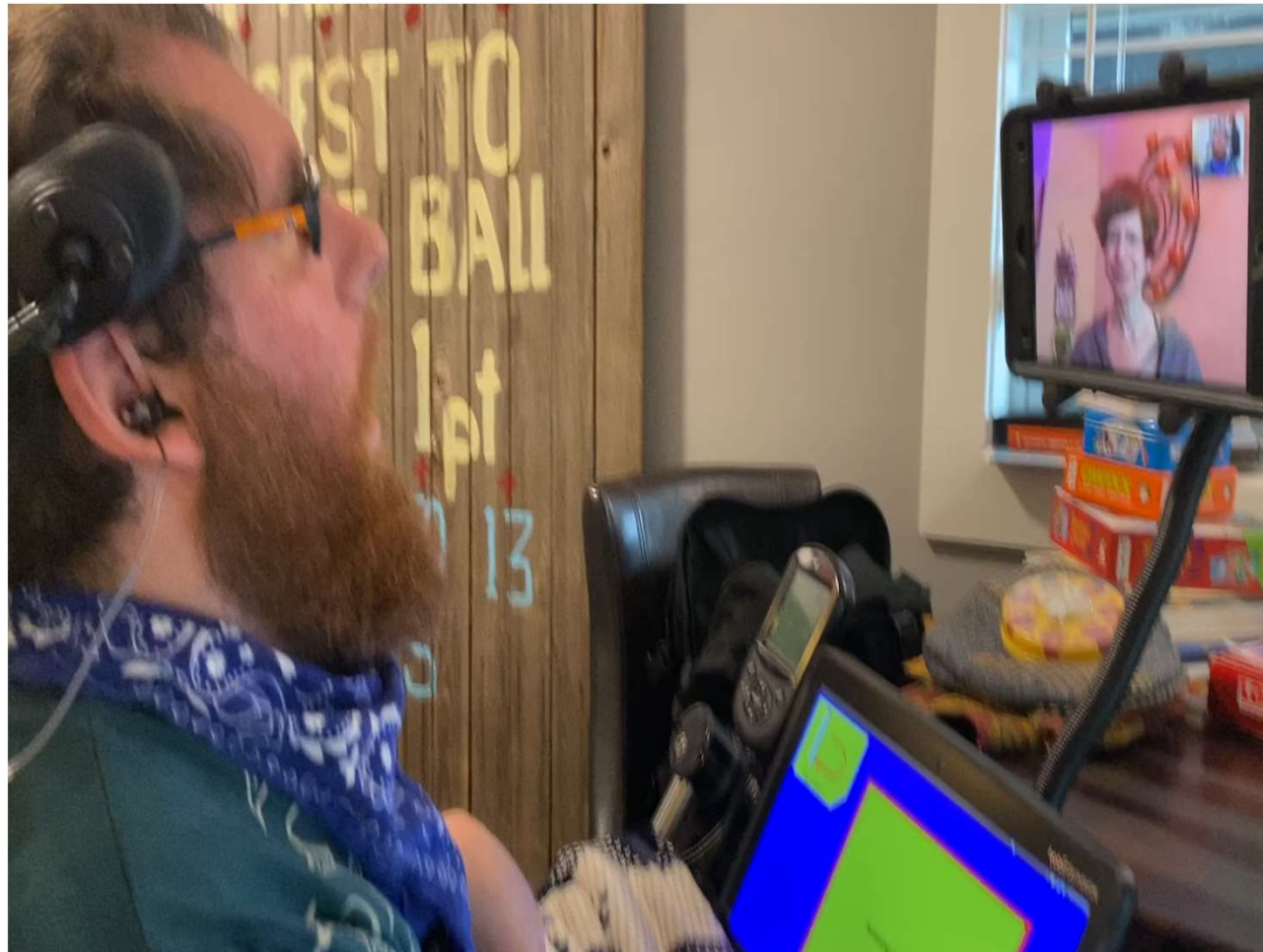
Alex video : social script



Alex video bible school: talent



Interview with Alex



Some take aways.....

- Give a lot of opportunities
- Create active engagement
- Do success based activities
- Provide multimodal communication
- Be enthusiastic and have fun
- Get team/parent input



Stephen Hawking

“Quiet people have the loudest minds.”

“However difficult life may seem, there is always something you can do and succeed at.”



THANK
YOU