Core First Scanning Page Set

Implementation Guide

This guide explains the use of scanning in Snap Core First and offers teaching tools to assist facilitators, caregivers, clinicians, or users who are learning to scan.

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Getting Started

Scanning features in Snap Core First are designed to improve speed and ease of use while decreasing cognitive load. If you need additional assistance, consult an Occupational Therapist or Speech Therapist who specializes in physical access to assistive technology.

To open the scanning pages in Snap Core First, you will need to create a new user. If this is the first time you have opened Snap Core First, start at step 4.

1 Select the **Edit** button.

2 Select **User**, then select your current user.

3 Select **New User** (swipe down if needed).

4 Select **Get Started**.

5 Select **Show More,** then choose **Scanning Snap Core First** as your Page Set.

Verify that your access method is set to scanning before doing any editing. To view your current access method, select **Edit, User, Access Method** (left side).

Introduction to Scanning

Scanning is an access method that provides people with significant motor disabilities (e.g. Cerebral Palsy) a way to make selections on a communication device or computer when Touch, Mouse, and Gaze Interaction are not possible.

When scanning, the device highlights items on the screen visually (e.g., blue outline), auditorily, or both.

When the highlight reaches the desired item, the individual makes a selection using a switch. Selections usually require one or more switches.

Scanning, like other indirect selection techniques, should only be used for individuals who do not have enough motor control to use direct selection techniques.

Research shows that scanning can be the slowest and most difficult of all the access methods (White, et al., 2010, and Dropik and Reichie, 2008). However, scanning may be the best option for individuals with limited motor movements and/or visual issues.

Scanning is extremely customizable and can be adjusted to suit individual needs.
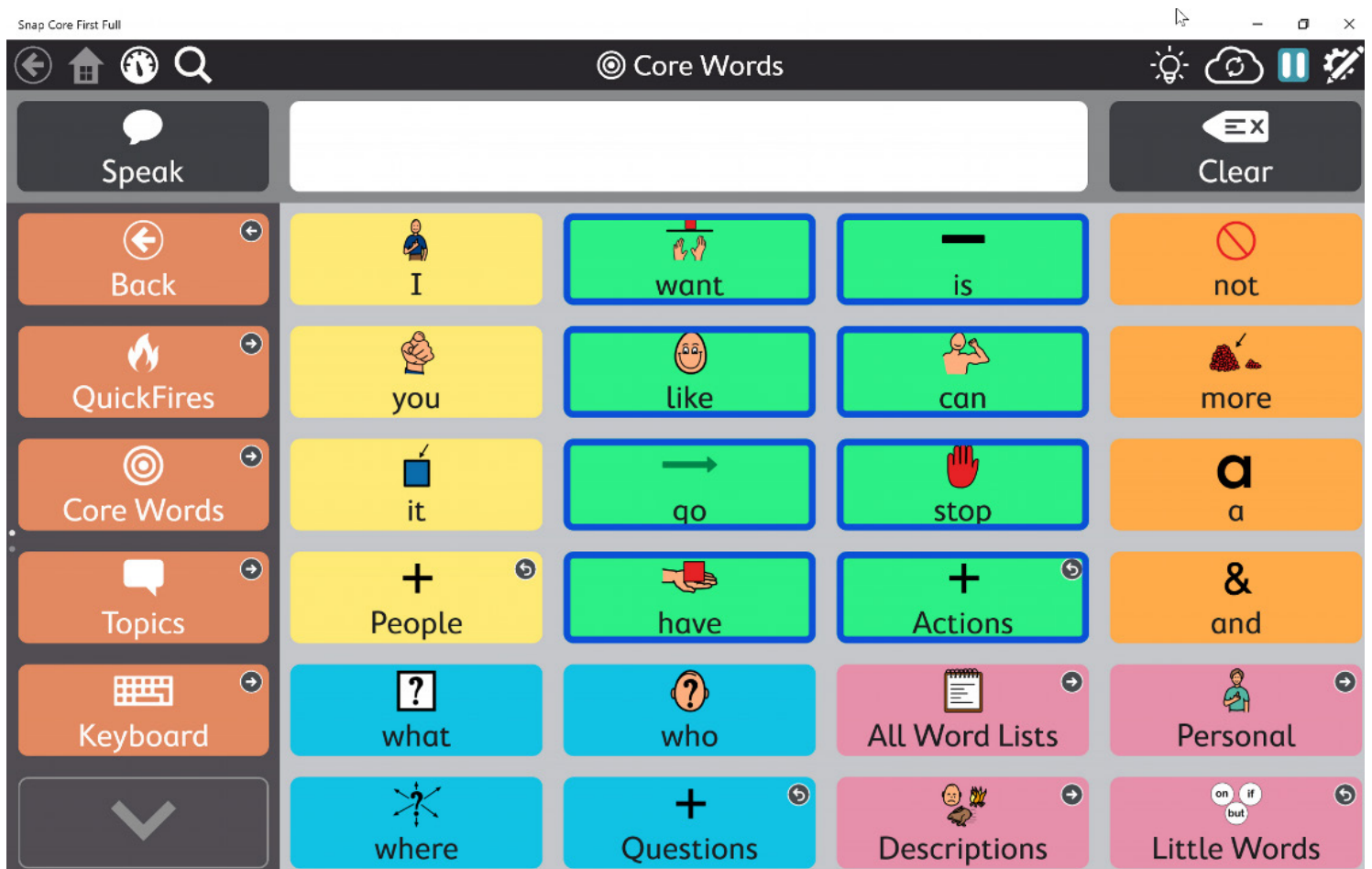
Scan Types and Patterns

The Scan Type setting determines how the scan highlight advances and how selections are made. The scan highlight can move automatically, based on a set time interval, or it can be controlled by the user with a switch. The two most common types of scanning are automatic and step scanning.

Scan Types

Automatic Scanning:

One Switch Autoscan

- The device scans through each target and the user hits the switch when their choice is highlighted. Typically set up with one switch.

- This method requires fewer selections and is used for individuals who cannot hit a switch consistently.

- This method requires more attention and waiting and can lead to missed selections if the user's timing is off.

> ℹ **Scan Types and Scan Patterns are found in the *User > Access Method* menu.**

Step Scanning:

One Switch Scan or Two Switch Step Scan

- The individual uses one switch to move through selections on the device and makes selections with a second switch.

- One switch scanning uses two different types of hits on the same switch. The user may, for example, activate the switch to move the highlight and hold down on the switch to select.

- This method is effective for an individual who needs more control over the scan. It places less emphasis on timing since the individual controls the highlight.

- The individual needs to have two possible switch sites or relatively good motor control for hitting/holding a single switch in a different way.

> 💡 Many clinicians suggest using Step Scanning whenever possible as it can increase efficiency, decrease missed hits, and facilitates the individual's active attention. Check with an OT to help decide if there is potential for two switches.

Scan Patterns

Linear

- Scans items individually from a left to right, top to bottom order.

- Generally used for pages with a smaller number of buttons or for individuals who are new to scanning.

- Recommended for scanners who have low vision and need to hear each option read aloud.

- Linear scanning is slow, but less cognitively demanding.

Row/Column

- Scans items row by row, from the top of the page to the bottom. When a row is selected, the items in the row are scanned individually from left to right.

- Column/Row scanning is a similar option; columns are scanned first, then rows.

Group

- Scans pre-defined groups of buttons that scan as a single unit. When the user selects the group, the buttons in that group are then scanned individually.

- Group scanning can increase the speed of scanning overall.

> 💡 If you change the scan pattern, you can scan items within a large group by row or column, or you can scan items in a smaller group in a linear pattern.
>
> You can set auditory cues for groups (e.g., colors) and individual buttons (e.g., red, yellow, blue, etc.). For more information, see the Auditory Scanning section on page 8.

Switch Positioning

Individuals who use the Scanning access method all have motor impairments. Therefore, it's important to be sure that hitting a switch is not another difficult motor task. Your goal is to find the most natural, least fatiguing switch placement for the individual. Finding a switch site may require help from an Occupational Therapist or Physical Therapist familiar with access methods to ensure the best choice.

When trialing switch sites, make sure that the individual is in a supported, comfortable position. Try to recreate the positions they are in throughout the day. Consider how will they hit the switch in their wheelchair as well as how will they access it in bed or their favorite recliner. Switch mounts are available and more than one may be necessary.

Switch sites are as variable as switches. Some individuals use their head, shoulder, elbow, hand, knee, foot, and more.

Use these tips to trial various switch positions:

- Focus on supported positioning before you begin.

- Avoid muscles with high tone, don't use uncontrolled spasm movement for activation.

- Select the body part and movement with the best motor control and least used movement.

- Ask the individual for their opinion and trial the switch during motivating activities.

- Remember that different seating throughout the day may require different switch sites.

- Modify the switch, the settings within the system, or the mounting as needed.

- Consult with an Occupational Therapist, Physical Therapist, or Assistive Technology professional whenever possible.

Switches and Accessories

Many kinds of switches are available for scanning. Contact an Assistive Technology professional near you to trial various options. Don't try to find the perfect switch or switch position right away; there is a learning curve for everyone.

Buddy Buttons and Jelly Bean switches are common switches. Light touch switches, such as the Micro Light, are extremely sensitive to even small movements. There are also pneumatic (controlled by breath), joystick, cordless, wobble, pillow, grasp, and eye blink switches and many more! Find the switch that is the easiest and most accurate for the individual.
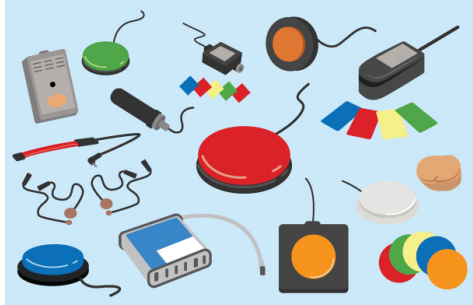
The I–Series and I–110 devices have two switch ports. When switch ports are not an option, look for USB interface switches and Bluetooth switches.

Choosing a Switch

There are several important considerations when you are choosing a switch:

- Focus on one body part or movement.

- Decide how to mount a switch for the chosen movement. Should it strap onto the user, attach to the lap tray, or be placed on a stable mount close to them? Trial various switch positions.

- Select the best switch size for the chosen body part, movement, and mounting need.

- Different switch types are activated by varying degrees of pressure. Choose a switch that fits the motor needs of the individual.

- Practice with the switch and customize as needed. Adjust the switch settings in Snap Core First to prevent accidental hits and customize switch sensitivity.

If a switch is not worn on the body, switches can be positioned with a mounting plate and mounting arm. Mounting accessories are available through Tobii Dynavox.

Teaching Scanning

Many parents and professionals struggle to find ways to teach scanning. Many people use partner-assisted scanning as an introduction to scanning. This method allows a communication partner to list or scan through possible choices for individuals who are non-verbal. This method is very limiting, though, and the communicator depends completely on the choices the partner offers. Therefore, moving on from this method is important.

An individual does not need to master low tech or partner-assisted scanning before learning to scan on a device. Sometimes technology makes it easier and more accurate for an individual to use scanning to communicate. This may be due to switch sensitivity, the timing settings within the device, the visual feedback on the screen, or simply the motivation and clarity that comes from using a voice output device.

There is no need to work on each scanning skill separately. While you work on improving cause and effect with the switch, you can also model how to use switches for choice making. Instead of turning on the same switch-adapted toy over and over, try using a low tech speech device with a recorded message to play an individual's favorite song on Alexa, watch a fun video online, or tell a joke.

Use motivating activities or switch games to introduce communication through scanning early on.

When you are teaching a beginning scanner to move from low tech or partner-assisted scanning to high tech scanning on an AAC system, try the following suggestions (McCarthy, J. 2019):

- Visual scanning: Scanning on high-tech devices often uses an outline or frame to highlight items on the screen. Re-create this experience in real life by making a large empty frame out of cardboard in the same color as the outline on the high-tech device. Next, move around the room and put the frame around choices in the room (e.g., computer, blocks, bookshelf). Ask the individual to hit their switch when you put the frame around what they want.

- Auditory scanning: For scanners with low vision, place a few people in a semi-circle around the individual. Ask each person to say a word or phrase aloud. Then, ask the user to hit a switch when they hear the target word. This "surround sound" example might help individuals to understand the idea of auditory scanning.

- Movement may help, too. Lay out squares on the floor and move the individual's wheelchair over each choice as you read them aloud. When the individual hits the switch, stop the chair and read out the selection.

- Find age-appropriate switch games online or create a PowerPoint with motivating photos, videos, or sound effects. Use these or other activities to introduce automatic scanning or step scanning. Computer adapters can turn mouse clicks into switch hits.
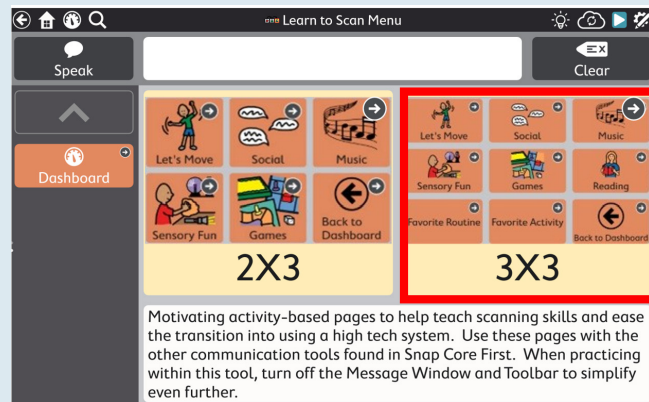
The Learn to Scan Pages

The Learn to Scan Tool contains activity-based pages that help teach scanning right in Snap Core First. These pages help introduce scanning to an individual but should not be their only communication page set. Use the Learn to Scan pages during direct instruction, in play time, or in therapy. The rest of the time, use the communication tools within Snap Core First (e.g., Core, Topics, Quickfires, etc.) as the individual's primary pages.

**To access the Learn to Scan Pages:**

1 Select the **Dashboard**.

2 Select **Learn to Scan**.

3 Select a grid size.

4 To decrease the complexity further, turn off the Message Window, Tool Bar, and Group Scanning while practicing here.
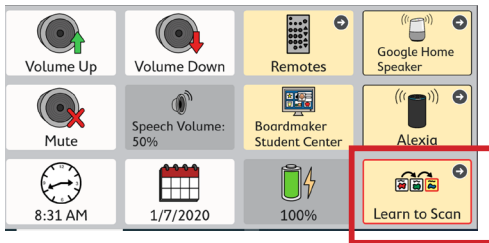
Two grid sizes are available, but we recommend starting with the 3x3 grid to provide access to more vocabulary.

Motivating activity-based pages to help teach scanning skills and ease the transition into using a high tech system. Use these pages with the other communication tools found in Snap Core First. When practicing within this tool, turn off the Message Window and Toolbar to simplify even further.

The default settings in the Core First Scanning Page Set are linear scan without auditory feedback. However, the content can be scanned in any pattern and auditory feedback can be turned on for users with visual difficulties. Each page has a Favorite button that can be customized. Edit the Favorite button to say the individual's favorite thing in that selected area. For example, customize the Favorite button in the music activity with a favorite artist or song.
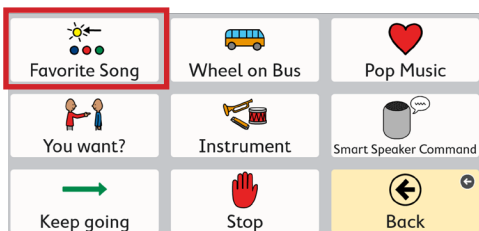
If the provided content is not motivating to the individual, add pages to include activities, routines, or games that are preferred and engaging. Blank templates are available in the higher grid sizes.

Snap Core First allows for quick editing , so you can personalize in the moment.
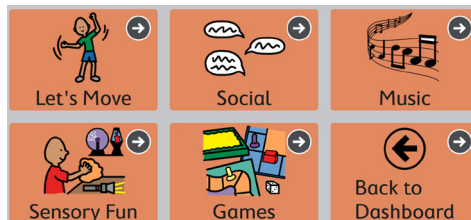
Watch this video to learn how to edit a button.

Scan code or **click here**

Auditory Scanning

Individuals who need to use scanning on their AAC system may have visual impairments. If those impairments impact their ability to see or visually attend to the screen, auditory feedback is recommended.

When you are using the Scanning Page Set on Snap Core First, the Learn to Scan Tool in the Dashboard may be a good place to start practicing auditory scanning.
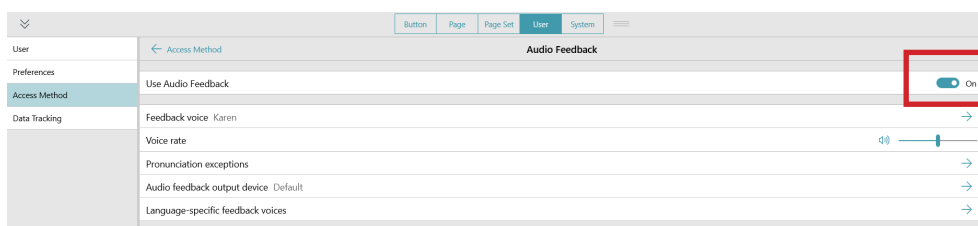
Try to use a step scanning method whenever possible. If it is too challenging to an individual's motor skills, then Autoscan may be a better solution.

If you are using Autoscan, you may want to slow your speed or transition time if the individual is a bit late to select a target.

In that same settings menu, be sure to set **Speak Full Audio Cue before Advancing** to ON. This will keep the device from moving onto the next option before the last audio cue is completely spoken.

Auditory partner-assisted scanning with a communication book is one way to introduce auditory scanning. Scan the QR code below to access a sample video from our friends at the Ace Centre:

Scan code or [click here](#)

Consider the following suggested settings for a first-time user:

- **Group Scan**: ON (This separates the toolbar and the message bar into their own scan groups.)

- **Scan Pattern:** Linear

- **Audio Feedback**: ON

Modeling and Training

Research shows that modeling is the best way to teach people to communicate through AAC. When you model AAC, you use the device yourself as you talk and interact with an individual.

When you are working with a scanner, use the individual's switches and device. You can also touch the device directly but speak aloud as you navigate and make selections.

If you watched the video on the Auditory Scanning card, you saw the therapist say "No." when she listed the choices she didn't want and "Yes." once she found the correct target.

Scanning requires attention, so be patient and help he individual focus by decreasing distractions. Use headphones for auditory cueing in a noisy environment and remind communication partners to wait patiently and not disturb the individual's attention while they are scanning.

Remember the following key points about modeling:

- Modeling is about showing an individual how to communicate.
- Modeling does not require imitation.
- Model key words instead of every word you say.
- Speak aloud as you navigate and find vocabulary.
- Remember that mistakes are OK. They give you the chance to model correction strategies.
- Modeling is not quizzing or testing.
- If access is the target, model with the same equipment they use. If language is the target, you can model by touching the screen instead.

People who have daily contact with an individual using scanning must understand the following:

- How to turn on the device.
- How to position and set up the device and switches.
- Basic troubleshooting.
- Strategies for being patient and modeling when necessary.
- How to be a good communication partner.

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Look in the Snap Core First Pathways free app to find instructional videos and handouts about these and other communication partner tips. You can also take photos of the switch and mount setup for caregivers, and label ports as needed.

Editing a Scan Group

The Snap Core First Scanning Page Set has default scan groups in all grid sizes. If you don't see groups while scanning, use the following steps:

1. Select the **Edit** bullton.

2. Select the **User** tab.

3. Verify that you are in the Scanning Page Set, and then select **Access Methods**.

4. Under Scan Behaviors, set **Group Scanning** to **ON**.

- When editing for a scanning user, select **Scanning** as your access method (you can still touch the screen while editing). If you switch the method to Touch, your changes will not appear when you return to scanning.

- You can swap buttons and move buttons in Edit Mode without disturbing scan groups. The groups are based on location, not on the individual buttons.

Edit the scan groups:

1. Select the **Edit** bullton.

2. Select the **Page** tab.

3. Select the Scan Groups tool.

4. Each group has a color outline. To modify a group, select its color circle at the bottom of the screen.

5. To create a new group, select **+** and touch the buttons you want to add to the group.

6. Select **Done** to save changes
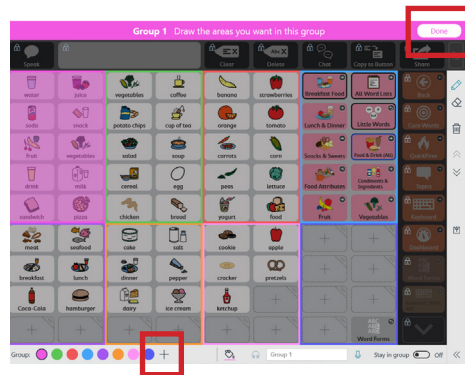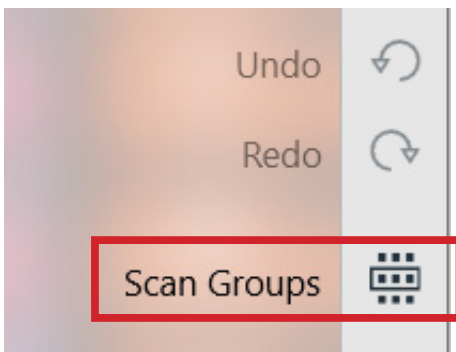
When Stay in Group is enabled, the scan will re-start within the scan group after a selection is made. This allows users to easily make multiple selections within the same group, such as when making a list.

Change the scan group auditory cue:

1. Select the color circle that matches the group.

2. Select the white text box on the bottom of the screen.

3. Type in text that will be spoken by the device auditory feedback voice, or record your own voice cue.

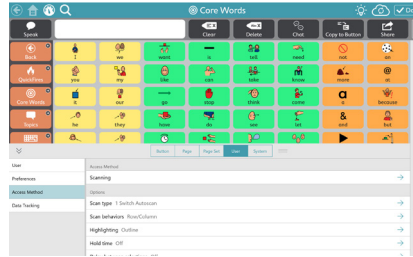4. Select **Done** to save changes.

Remember to keep auditory cues brief. A long cue slows down the scan or is cut off, depending on the feedback settings you chose. We recommend three words or less, but the cue may need to be shorter if the individual is scanning very quickly.

Modifying Scanning Settings

AAC should be customized for all users, but especially for individuals who use Scanning as their access method. Scan settings are very important and require trial and error to get right.

Adjust the scan settings to make scanning more efficient, less fatiguing, and more accurate. The following table highlights some specific scan settings in the Access Method menu, but we suggest that you experiment with each setting to see the adjustments they make.

The Page Set Preferences menu offers more options, such as scan ordering.

Setting	Function
Scan Type	See the Scan Types and Patterns section on page 3.
Scan Behaviors	▪ **Scan Pattern:** See the Scan Types and Patterns section on page 3. ▪ **Number of Passes:** Sets the number of passes (or scans past a target or group) that occur before returning to the top level. ▪ **Group Scan:** When this setting is on, the device groups the Toolbar and Message Window separately from the content and allows for auditory cueing for each group. Activate this setting to use the default groups or create your own. ▪ **Scan from Last Selection:** When enabled scanning resumes where the last selection was made. Disable this setting to resume the scan at the top of the page.
Highlighting	Select an outline, overlay, or invert as a visual cue. Customize the overlay color and thickness. This can increase attention and improve visual cueing.
Hold Time/Delay Between Selections	Decrease the sensitivity of the switch to reduce over-hitting. Hold time is the amount of time the switch must be pushed to activate. Delay between selections is helpful for users with tremors or anyone who accidently gets double hits on the switch.
Audio Feedback	Use audio feedback for users with visual issues. In audio scanning, the device reads the button label or a set audio cue as each button is scanned. Choose a voice for audio scanning that is different than the user's output voice. This decreases confusion for everyone if headphones are not in use.
Zoom	This setting zooms in on the button that is being scanned. *Note: Zoom will only zoom one button, not an entire group.*
Show Pause Button	Enable this setting to show a button in the Top Bar to pause the scan. Pausing the scan can be helpful if you are touching the device screen while modeling. The Top Bar is only accessible by Touch.

▪ In the 3x4 Grid Size, the Toolbar requires scrolling to access all the tools. If the Toolbar scroll buttons are slowing down or confusing the user, try adding rows to the Toolbar so that more buttons are visible at a time. In Edit mode, go to **Page Set**, **Preferences**, under Toolbar Rows disable the **Match Page Set** setting, then increase the number of rows.

▪ In Page Set Preferences, you can also change the Page Set Scan Groups order and Audio Cues.

Troubleshooting

Problem	Solution
User cannot activate a switch accurately, consistently, or in a timely manner.	■ Check switch position. ■ Try a different switch. ■ Try a different body part (e.g., hand, finger, head, shoulder, elbow, knee, foot, isolated muscle movement, etc.)
User hits switch too early or too late.	■ Check switch placement. ■ Increase scanning speed. ■ Add auditory feedback. ■ Adjust hold time. Increase hold time if the user is hitting too early and decrease hold time if the user can't hold the switch down. ■ Adjust release time. Increase release time if the user is hitting the switch multiple times in a row and decrease release times if the user does not select after hitting the switch multiple times.
Switches are not working.	■ Make sure the switches are completely plugged in to the device. ■ Check your Bluetooth connection (if applicable). ■ Make sure the access method is set to Scanning. ■ Restart the device.
Audio feedback is not working	■ Make sure that audio feedback is enabled in the Access Method Settings menu. ■ Turn the volume up. ■ Make sure the hardware isn't muted. ■ Check the Audio Feedback Output Device setting. ■ Go into Edit Mode and verify that the scan groups have audio cues.
Scanning takes too long.	■ Increase the scanning speed. ■ Change the scan pattern.
The user loses attention during a task.	■ Change the scan pattern. ■ Set the highlight to invert rather than outline. ■ Add auditory feedback. ■ Try a step scanning method.

Resources

Teaching Learners with Multiple Needs

Teaching Learners with Multiple Special Needs has an extensive list of switches, software, games, and activities for people who scan.

Scan code or click here

llc.com.au

The Independent Living Centre of Western Australia has a very comprehensive handout on developing switch skills.

Scan code or click here

med.unc.edu

The UNC School of Medicine offers an informative handout on auditory scanning and aided language stimulation from Linda Burkhart.

Scan code or click here

med.unc.edu

The UNC School of Medicine provides information on partner-assisted scanning from the Center for Literacy and Disability Studies.

Scan code or click here

For technical support, help finding a local solutions consultant, or general questions, use this QR code to check our website at **www.tobiidynavox.com.**

For more information on ordering switches, switch mounts, and other scanning accessories, contact the Funding Department at 1-800-344-1778 and select option 3.

References

Bean, Ian (2011). Inclusive Technology, Learning Journeys: Switch Progression Road Map. Retrieved from http://www.ianbean.co.uk.

Beukelman, D. R., & Mirenda, P. (2005). Augmentative & alternative communication: Supporting children & adults with complex communication needs. Baltimore: Paul H. Brookes Pub. Co.

Burkhart, L. (2018). Stepping Stones to Switch Access. Perspectives of the ASHA Special Interest Group – Augmentative and Alternative Communication.

Dropik, Patricia & Reichle, Joe (2008). Comparison of Accuracy and Efficiency of Directed Scanning and Group-Item Scanning for Augmentative Communication Selection Techniques with Typically Developing Preschoolers. American journal of speech-language pathology / American Speech-Language-Hearing Association. 17. 35-47. 10.1044/1058-0360(2008/004).

Hajjar, D.J., McCarthy, J.W., & Hajjar, M. (2018). Supporting communication partners in a leisure setting to enhance social interaction and participation for individuals with complex communication needs. Clinical Archives of Communication Disorders, 3(3), 1-15.

McCarthy, J.W., & Boster, J.B. (2018). A comparison of the performance of 2.5 to 3.5-year-old children without disabilities using animated and cursor-based scanning in a contextual scene. Assistive Technology, 30(4), 183-190.

McCarthy, J.W., DiGiovanni, J.J., Ries, D. T., Boster, J.B., & Riffle, T.L. (2019). Exploration of head related transfer function and environmental sounds as a means to improve auditory scanning for children requiring augmentative and alternative communication. Assistive Technology.

Petersen, K., Reichle J. & Johnston, S. (2000). Examining Preschoolers' Performance in Linear and Row-Column Scanning Techniques. Augmentative and Alternative Communication, 16:1, 27-36.

Ratcliff, An (1994). Comparison of relative demands implicated in direct selection scanning: Considerations from normal children, 10:2, 67-74.

White, et al. (2010) Group-Item and Directed Scanning: Examining Preschoolers' Accuracy and Efficiency in Two Augmentative Communication Symbol Selection Method. AJSLP, vol19, 311.