Q: I have a few users that are on the Springboard. They have quite severe cognitive impairments and I don't think they can go to icon sequencing. However, I still find the Springboard useful as it gives access to core vocabulary. They currently need more than just the 32 core vocabulary on the Springboard, and so am a bit stuck on where to proceed next. Please advise. Thank you.

A: The following answer is based on insights and suggestions from the following individuals: Paul Andres (Germany), Maureen Casey (Australia), Russell Cross (USA), Sheryl Haeusler (USA), Cindy Halloran (USA), Katya Hill (USA), Tracy Kovach (USA), Janet Lehr (USA), Angie Liarikos (USA), Andrea Madeya (USA), Sandra Osborn (USA), Gail Van Tatenhove (USA), and Sara Wilds (USA).

You raise a very important issue with your query. **Can individuals with severe cognitive impairments do icon sequencing? How can you "grow" an AAC system to provide more core vocabulary for individuals with severe cognitive impairments?**

The choices are simple. If you want to have access to more than 32 core words, you either have to (1) have a device with more than 32 keys so you can keep selecting 1 key to get 1 word or (2) you need to introduce simple icon sequencing to maximize the value of each of the keys on your front screen.

First off, it is exciting to hear that the users you are supporting, who have severe cognitive impairments, need MORE than just the 32 core vocabulary words on the main screen of the Springboard. Many children with severe cognitive impairments quickly outgrow digitized devices, like the Springboard, because their vocabulary learning trajectory exceeds expectations when treatment plans reflect goals related to ***building linguistic competence***. It sounds like this is what has happened with your children. By focusing on core vocabulary, you have demonstrated that individuals with severe cognitive disabilities can learn and use core vocabulary.

If you are using the Unity32 Child MAP in the device, that says that these individuals with severe cognitive disabilities have access to and are using simple pronouns (I, you, it, my), basic verbs (want, eat, make, get, help), negation (don't), interrogatives (what), adjectives (more, happy, sad, tired), prepositions (in, out, on, off), interjections (please), and determiners (that). These children have shown you that are capable and interested in communicating MORE than just nouns. They are on the path of normal language acquisition, which is all about children learning to use "simple words in complex structures" (Baker, 2009 – AGOSCI conference, Australia), even children with severe cognitive impairments!

If these children are (1) hitting the ON button then (2) hitting a key with a vocabulary word - they have just completed a simple sequence. If these children are (1) selecting a word from the main overlay and then (2) selecting a word from the activity row – they are doing a sequence. If they are (1) selecting one word from the main overlay and (2) then another word from the main overlay to make a simple sentence – they are doing a sequence. If they are (1) selecting the ACTIVITY KEY, (2) then a CATEGORY KEY from the Activity Row, and (3) then the WORD from the Activity Row – they have completed a three-part sequence. A "sequence" is simply knowing what to do FIRST in order to get what you want NEXT.

I would venture to guess that these individuals with severe cognitive impairments are doing simple sequencing; however, you may be concerned about using the type of "icon sequencing" that is used in a conventional Minspeak program. This type of "conventional icon sequencing" involves (1) selecting an icon with multiple meanings and then (2) selecting another icon to define the specific meaning required.

So, where do you go from here? I suggest that (1) you test your supposition as to whether or not your users can "go on to icon sequencing" and (2) based on your "test," you develop a customized program that expands the user's current use of the Springboard. As they further out-grow the Springboard, it may then be time to (3) consider a step up to a new Minspeak device.

Individuals with severe cognitive impairments can relate multiple concepts with icons and can learn to complete short, simple sequences in Minspeak devices, especially when those sequences follow consistent patterns. Using these patterns supports the majority of their learning strengths (likely visual, motor, kinesthetic) rather than their challenges (language, auditory processing, perseverative behaviors). Besides, designing a simple Minspeak system with icon sequences in consistent patterns is easier than single hits for many clients with severe cognitive impairments. Using multiple meaning pictures reduces the number of pictures they must learn and using sequencing patterns prohibits perseveration on one-shots. Perseverative behaviors are much harder to deal with than teaching multiple meanings, icon sequencing, and motor patterns.

Issue #1: How do you "go on to icon sequencing?"

One way to test your supposition that "I don't think they can go to icon sequencing" is to introduce some very simple icon sequence patterns that maximize what they already know (hit that key to say that word), but adds a step on the end.

This test would involve re-coding the verbs with a simple ICON + VERB

pattern.

1. Add a color code (green) to the VERB KEY (Assign Key Menu).
2. Erase each of the verbs and re-store them as ICON + VERB.
3. Using the Dynamic Activity Menu, add the appropriate dynamic activity to each of the verb icon sequences so that the person still has access to the words in the activity row that they used when the word was a single hit.

If the individuals you support can learn to access the core verbs using the two-part sequence, you have evidence that they can "go on to icon sequencing" with a PICTURE + PART OF SPEECH pattern. To test whether or not they can learn multiple meanings of an icon, add a second PICTURE + PART OF SPEECH pattern (e.g., ICON + ADJECTIVE). In this scenario, the child might be sequencing APPLE + VERB to say "eat" and APPLE + ADJECTIVE to say "hungry."

Auditory fishing is typically used with individuals with visual challenges, however, it can also be a fun and interesting feature to utilize to help your children make the transition to icon sequencing and learning multiple meanings. They can use the auditory fishing feature to "hear" the meaning before they select the specific word they want to say.

> See the Minspeak website section entitled **TIPS & TRICKS** and **INTERVENTION PLANNING** for ideas on how to provide life experiences, teach icon families, and teach parts of speech – all ways to promote development of multiple meanings and conventional icon sequencing. Also, go to Use of Minspeak in the **More Information** sidebar to download information on using Minspeak with individuals with cognitive disabilities.

Another way to test your supposition is by reprogramming the one hit messages so that they all begin with a single key. This test would challenge the individual to hit a new icon BEFORE hitting the icon he/she was used to selecting. However, when the child looks at the device, all he/she will see is the single starter key. All the vocabulary is now hidden in a simple sequence. If you can teach the child to hit the key that is lit up and THEN the key with the vocabulary word he/she wants, he/she will be demonstrating to you that learning to do sequences with another simple pattern is possible. While doing this test, you may want to use a different user area in your Springboard.

1. Copy the Unity32 CHILD into the area.
2. Go to the Assign Key Menu and Assign CLEAR DISPLAY as an ICON. Change the Icon to the TALKER1 picture. Change the key color to

something bright that stands out.
3. Store TALKER1 + TALKER1 = CLEAR DISPLAY
4. Erase all the current 1 hits.
5. Store each word as TALKER1 + ICON.
6. Add the appropriate Dynamic Activity to each of the new sequences.

Another suggestion is to re-program each single hit key as a double hit. Keep the link to the Dynamic Activity with the single hit and add the appropriate Dynamic Activity to the double hit as well. That way, the child has access to the Activity Row vocabulary without having to say the core word first. Plus, it also opens the door to more traditional icon sequencing. You may want to test this pattern with the pronoun words (I, you, it) and determiner (that).

Each of these suggestions tests one of the patterns that are often used in Minspeak application programs for organizing icon sequences. Each individual test gives insight into the individual's learning style and provides clues to the best strategies to use when developing a customized, expanded program.

Issue #2: Develop a Customized, Expanded Program

Developing a customized program is dependent on many issues. Two keys issues are (1) the current potential of the device and MAP to accommodate customizations, and (2) the person's learning style, skills/challenges, and potential for further growth.

Let's consider first the current potential of the device and the MAP. In the 32 Location Child MAP there are several pages (INTERJ, PREP, QUESTIONS) that can be stored with Set Page Temporary. It is possible to erase the word "please" and store the INTERJ page as a Set Page Temporary; erase "to" and store PREP as a Set Page Temporary and erase "what" and store QUESTIONS with a Set Page Temporary. (Note: If using Springboard Lite, you don't have to use Set Page Temporary– just make sure to say 'yes' to have the page close after one selection.) The vocabulary on these pages is stored as closely as possible to the locations in Unity Sequenced. This greatly expands the vocabulary and many children are sequencing for interjection, prepositions, and question words (even when people say they can't do it!) This is just one way the current MAP could be expanded, based on programming currently present in the MAP.

Another way to customize your MAP (to expand the core vocabulary) is to develop customizations that take the form of "baby-steps" toward a more advanced Minspeak application program. For example, the pattern of ICON + VERB is common across all MAPs. If the student, during his/her test was taught ICON + VERB to say verbs, you could customize and expand the current 32 program by adding adjectives as ICON + ADJ. You could use

other patterns and add pronouns as double hits (I, you, it) and possessive pronouns (my, your, its with ICON + POSS), then pronoun phrases (I am going, I want, I like, I can, I will, I don't want with PRONOUN + ICON, PRONOUN + NOT + ICON).

The key to taking baby-steps toward a more advanced Minspeak application program is to review and familiarize yourself with those programs. But, the other key is to remember that it is MUCH easier to change a Minspeak Application Program than it is to change a child with severe cognitive disabilities. Any MAP is just a tool to help you get started. It is never a perfect fit for any individual. Don't be afraid to think out of the box and modify, re-design, and improve a MAP!

Issue #3: Step up to a New Device

The Vantage Lite would most likely be the device of choice as the step up from a Springboard. It gives you more "real estate" on the front screen. But even if you use the 45 location configuration, or the 60 location configuration, or even the 84 location configuration, you are still going to run out of keys if you want to maintain a single-hit system. (Don't fool yourself into thinking that page-after-page-after-page of single-hit words is easier than sequencing. Navigating through pages is just another breed of sequencing, but without the systematic logic and patterns of Minspeak.)

Suggestions for making the step up to a new device is to try to minimize new learning while maximizing the new features and potential of the device. For example, features in the Vantage Lite allow you to hide/show keys, use vocabulary builder to develop vocabulary "sets" and lessons, and of course, more keys on the main displays and in the activity row.

Finally, a transition from a device with digitized speech to a device with synthesized speech supports literacy skill development. Although an alphabet page on the Springboard can allow a person to explore the names of the letters, selection of letters does not produce a spoken word. The typically developing child will move from scribbling and inventive spelling to more formal writing. An AAC system with synthesized speech and a visual display can be used more effectively to model this learning process.