

Next-Gen Tactile Symbols – 3D-Printed Blissymbolics

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Heather Williams

Shannon Paige

** We have no relevant financial relationships nor relevant non-financial relationships to disclose.*

AVCREP CE Start Code: green53

Good afternoon and thank you for attending our presentation. Heather, Shannon, and I hope to convince you that there's something very special about our 3D-printed, Bliss Tactile Symbols.

The next three slides go into some depth on our backgrounds. I'm going to skip over them and simply say that I'm an ex-engineer, while Heather is education specialist, and an assistive technology and AAC specialist, and Shannon is a speech and language pathologist and an assistive technology specialist.

We are all volunteers in this effort and have no relevant financial relationships nor relevant non-financial relationships to disclose. We're working with a team of volunteer therapists, and you'll learn who they are later in the presentation.



Ken Hackbarth

Is the president of Volkswitch.org – an organization devoted to the democratization of assistive technology by leveraging the power and promise of 3D printing. Prior to his current position he worked for almost three decades as a systems architect for AT&T Bell Laboratories and its subsequent divestitures. He has Master of Science degrees in both Evolutionary Biology and Systems Engineering from the University of Arizona and a Master of Education in Special Education, with a concentration in assistive technology, from Bowling Green State University.



Heather Williams

Heather (she/they) is an Education Specialist and Assistive Technology and AAC Specialist. She has been teaching life skills and advocacy to transition age students with Multiple Disabilities for twelve years. Heather began her career as a community support facilitator in Scotland. During her time as a community support facilitator Heather saw time and time again how inaccessible our world is, especially in the area of communication. After hearing many reports of abuse amongst people who did not have access to constant and effective communication, Heather decided to dedicate her career to teaching advocacy, social sexual health, abuse prevention, and Special Education rights to disabled people and their families, as well as teaching disabled youth how to communicate effectively in multiple environments and teaching families how to advocate and navigate the labyrinth of Disability Rights. As a Transition Skills Education Specialist Heather teaches young adults and their families through practical application and collaboration that communication is a basic human right that is the foundation of a safe and successful life, lived as independently as possible.



Shannon Paige

Shannon is a US Navy veteran, a speech language pathologist, and an assistive technology specialist. Following her service in the Navy, Shannon obtained her Bachelor of Science degree and her Master of Arts degree, both in Communication Disorders, from the University of Houston. She is Certified in Clinical Competence by the American Speech Language and Hearing Association. She has worked in rehabilitation, public schools, private practice, and as an education service center specialist. She has over 20 years of experience supporting assistive technology with an emphasis in the area of augmentative and alternative communication (AAC). She has worked with individuals across all ages to promote independence and believes communication is one of the most important components needed for individual autonomy. She has a passion for problem solving to ensure equitable access for individuals in all settings. She is currently the Education Project Manager of the Texas Technology Access Program at the Texas Center for Disability Studies, University of Texas with the goal of utilizing her experience in the promotion of best practice and training to support the selection, acceptance, and provision of assistive technology, supporting independence and autonomy for all, in every environment, across the great state of Texas (and beyond).

Learning Outcomes

- As a result of this session, participants will be able to describe the benefits of using tactile Blissymbols.
- As a result of this session, participants will be able to list/describe the free DIY core and support materials available at Volkswitch.org
- As a result of this session, participants will learn to use 3D-printed Blissymbols in communication lessons for students with visual impairments and/or blindness including those with cognitive disabilities.

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If you walk out of our presentation with a working understanding of these three topics, we believe you'll be prepared to leverage this new technology and these free resources to help your students develop communication skills - free of external limitations.

Agenda

- Traditional tactile symbols
- Project Core 3D-printed tactile symbols
- Bliss tactile symbols
- Scaffolding – supporting materials
- A view from the classroom
- Questions
- Extras: the Voice It, classroom tools, more...
- Visit the front table for hands-on exploration



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Here's our agenda:

- We'll begin by setting a baseline understanding of traditional tactile or tangible symbols.
- We'll credit the Project Core team from the University of North Carolina for their creative insight, before we talk about how their effort falls short of an optimal tactile symbol system.
- We believe we have created an optimal system based on Blissymbolics, so we'll spend a little time introducing you to the language of Blissymbols and to our Bliss Tactile Symbols.
- We've built an entire ecosystem around our tactile symbols, and we want you to know how you can obtain these free resources.
- We're talking about more than just ideas here. We want to share our experiences using these tactile symbols in the classroom.
- We'll give you an opportunity to ask any questions you'd like – but it

would be great if you could hold your questions until this point in the presentation.

- Finally, we hope we'll have the time to show you a special DIY device that gives our tactile symbols a voice - called the Voice It - as well as some 3rd-party tools for managing the symbols in the classroom
- We have all of these items up on the front table so please come up and visit us after the presentation.

Tactile/Tangible Symbols

Tactile symbols support independent communication for individuals with complex communication needs.

This includes individuals with vision impairments, blindness, deaf-blindness, weakness in the area of executive function, autism, and especially those that don't respond to traditional augmentative communication systems.



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You've all seen tactile and tangible symbols before – even if just in pictures. They're used by individuals who are blind or visually impaired and can help them express their needs and desires, as well as gather information about the world around them.

The symbol can incorporate a physical object like a ribbon or simply have a unique tactile profile.

This slide shows two examples of traditional tactile symbols. The first is a plastic starfish glued to a card with the word "star" printed on the front. The second is seven raised dots on a card labeled "snow".

Traditional Tactile Symbols

- Often a physical object glued to a rigid backing
- May have a presumed or learned tie to the symbol's referent: plastic spoon = eat
- May not be as clear if the referent is less tangible
- Significant variation from symbol set to symbol set
- What to do with physically large concepts?



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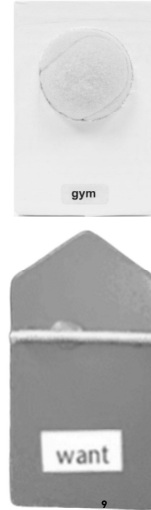
- Traditional tactile symbols are typically constructed by gluing a physical object to a rigid backing.
- The physical object may be closely associated with the symbol's referent
- For example, the slide shows a plastic spoon glued to a piece of cardboard to represent the concept “to eat”.
- It's much more difficult to create effective symbols for concepts that are less tangible
- The slide shows a tactile symbol with a raised circle as a representation of the concept “yes”.
- Less tangible concepts tend to be modeled very differently by different designers.
- Physically large concepts tend to be modeled by choosing a small component of the larger concept even if that small component is

unrepresentative of the overall concept. For example, how should a tree be represented? By a leaf? By a piece of bark?

Traditional Tactile Symbols - continued

- What to do with complex (multi-component) concepts?
- Rarely more than one hundred concepts
- Rules are hard to establish and follow
- Require rote learning
- “Partner Text” is critical for partner understanding (and rationalization)

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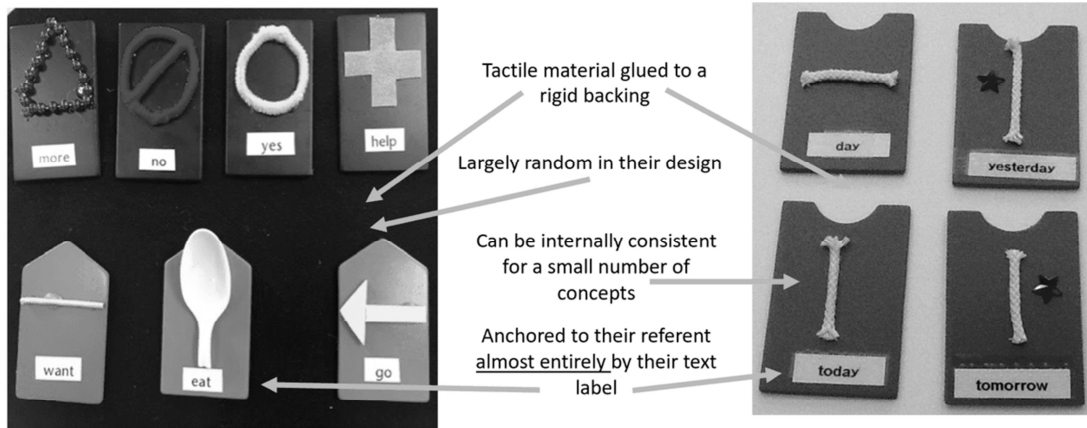
Complex, or multi-component, concepts are often modeled by selecting a single component of the concept

- Is a tennis ball the best representation of gym class?
- Traditional tactile symbol sets rarely represent more than a hundred concepts.
- Anytime a symbol set is constructed for a small number of concepts, there is little or no motivation to base the design choices on a set of rules.
- Without rules, there's little conceptual carryover from one symbol to another. Such symbols must, by definition, be learned through rote memorization.
- Probably the most telling aspect of traditional tactile symbols (just like popular graphic image sets) is the fact that they always include a text label.

Ostensibly the text is there to help communication partners – because without the text, it's unlikely that anyone would connect the symbol to the concept. Only by first reading the label can someone “back into” the referent – sometimes not even then.

- The slide shows a card with a piece of string glued horizontally onto it. Why would you intuit that this shape represents the concept “to want”?

Traditional Tactile Symbols - example



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Here are examples of two different symbol sets. The slide shows eleven traditional tactile symbols.

- Some symbols are relatively intuitive – an arrow for the concept “to go”.
- But why a bead triangle to represent “more”?
- I’m sure you can rationalize a cross representing “help” – especially a red cross (though this cross appears to be made of brown sandpaper) – How much cultural knowledge do you have in order to make the connection from a cross to the concept “to help”?
- The symbols on the right are, at least, internally consistent. They appear to use a small piece of rope to represent the concept of “now”. But where do you go next if you want to represent a concept like “to want”? The consistent theme is immediately lost.
- Imagine trying to intuit the meanings of these symbols without their text labels.

Arbitrary Shapes => Rote Memorization

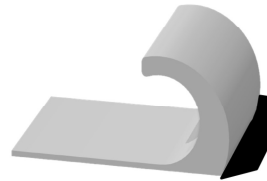
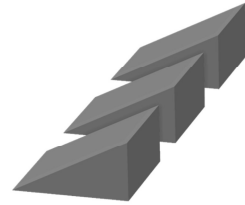
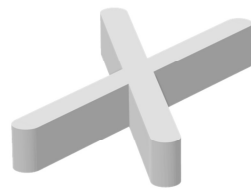
Physical Objects:



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3D-Modeled Shapes:



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Well, let's try it...

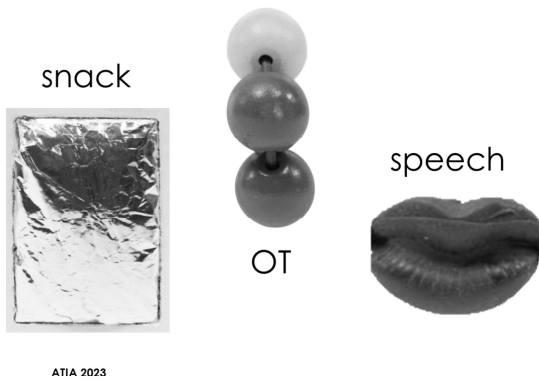
This slide shows six images taken from popular tactile symbol sets. There are three physical objects on the left: a rectangle of tin foil, three beads on a string, and a set of plastic lips. On the right are three virtual objects: an X, three ramps, and a cresting wave (for lack of a better description).

Take a moment and predict what concept each one represents.

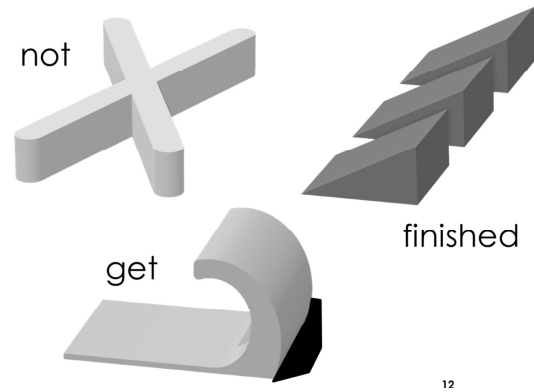
Ready?

Arbitrary Shapes => Rote Memorization - cont.

Physical Objects:



3D-Modeled Shapes:



Here's how these objects and shapes are actually used.

The tin foil represents “snack”. The three beads represent “occupational therapy”, the lips represent “speech therapy”, the X represents “not”, the three ramps represent “finished”, and the cresting wave represents “to get”.

How well did you do? Remember that the individual relying on the tactile shape can't take advantage of the partner text.

Project Core 3D-Printed Tactile Symbols



- Project Core: Center for Literacy and Disability Studies at the University of North Carolina-Chapel Hill
- Established a set of 36 Universal Core concepts/words.
- Designed 3D-printable models for each one
- **Brilliant!**
- Available for download as [STL files](#)
- 3D-printed repeatability

* Pass around samples

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Let's now look at a breakthrough in the creation of tactile symbols

- Project Core is a program of the Center for Literacy and Disability Studies at the University of North Carolina-Chapel Hill.
- They have established a Universal Core Vocabulary as part of their Universal Core Communication System.
- In support of their Universal Core Vocabulary, Project Core developed a set of thirty-six, 3D-printable, tactile symbols.
- This was a brilliant idea.
- The image on the slide shows an early example of their symbol for the concept "to go". It has a raised arrow from left to right, the word "GO" engraved, and Braille bumps for the letters: "g" and "o". All of these are on the face of the symbol.
- Project Core makes these symbols freely available to the public as STL files.

- Because the symbols are 3D printed it's easy to produce exact copies of a design.
- We'll now pass around some samples of the current Project Core symbol for the concept "to like". Explore the surface tactilely. Feel how the Braille is rendered on the top surface of a 3D-print.

We'll collect them after you've had a chance to evaluate them.

(<https://www.project-core.com/3d-symbols/>)

Project Core 3D-Printed Tactile Symbols – cont.

- STL files cannot be modified
- No way to add new concepts
- Too much tactile activity on the symbol's face
- Related concepts are tacitly unrelated
- Raised shapes are unrelated to their referent
- Rote memorization



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So, yes, this is a breakthrough. Unfortunately...

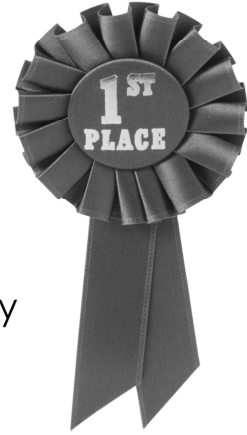
- The STL files cannot, reasonably, be modified if desired.
- There is no support for extending the set if needed. There are 36, and only 36, universal core words and 3D symbols.
- Including Braille and engraved text along with the raised shape, unnecessarily complicates tactile processing of the symbol. The Braille, in particular, is very scratchy and off-putting.
- If you look at the complete set of symbols, there are no obvious features that tie together related concepts, other than their word class. Learning one symbol provides no advantage in learning the next or a related symbol.
- Often, there's no obvious relationship between the raised shapes and their referent.
- The slide shows an image of their current symbol for the concept "more".

What is the connection between three raised bumps and the concept “more”?

- Without clear tactile relationships and carry-over, these symbols must be learned through rote memorization.

What would an optimal tactile symbol system look like?

1. Immediately conceptual
2. Simple elements
3. Extensible (generative)
4. Flexible features along with repeatability
5. Managed by an international standards body
 - a) Rules-based
 - b) Enforced consistency
 - c) Independent of culture



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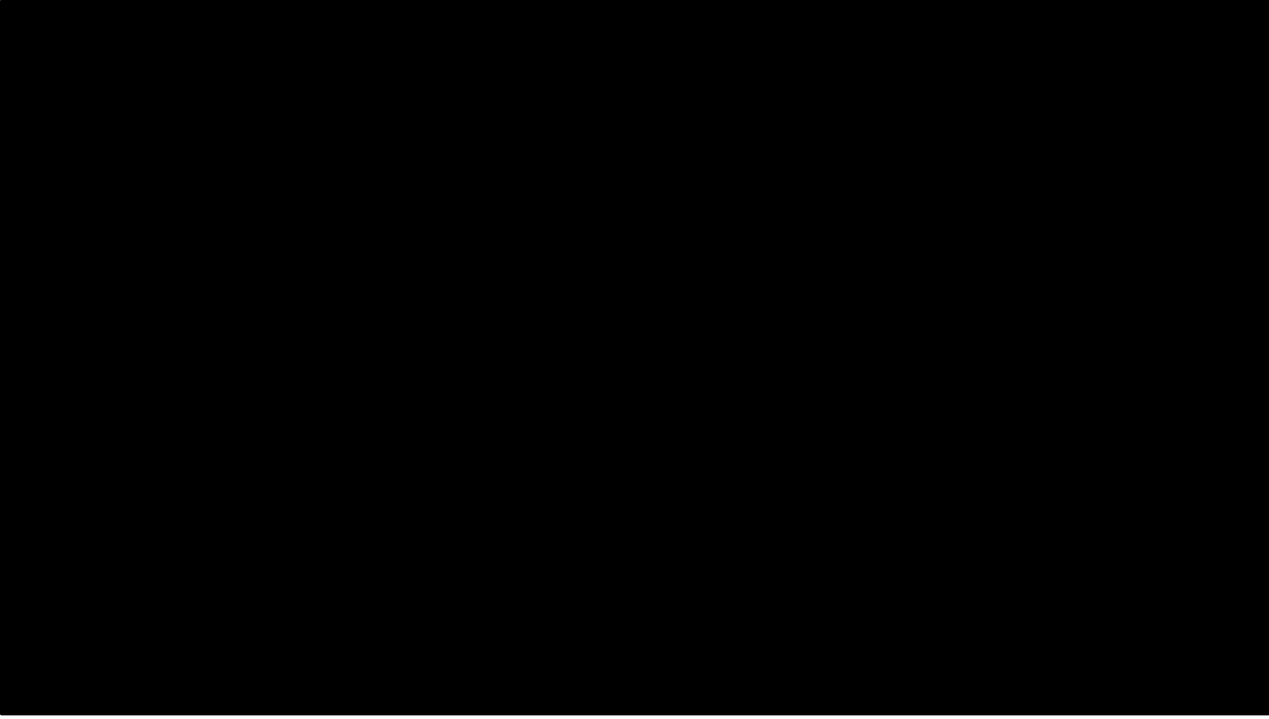
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If the previous tactile symbol systems are non-optimal, what would an optimal tactile symbol system look like?

1. First, it would utilize a Conceptual Language – as a result, there would be no intermediate conceptual transformations like: tactile shape => sign language => concept, or tactile shape => Braille letter, => English word => concept.
2. Second, it would be made of simple elements – thereby lowering the tactile and cognitive load (just a few lines and curves, basically 2-dimensional)
3. Third, it would be extensible – with a generative language, you can easily create new symbols from existing ones
4. Fourth, the tactile symbol design, itself, would be flexible – you and your student should be in control of the amount of complexity – yet creating exact copies of your design would be as simple as printing them.
5. Fifth, there would be a Standards Body to validate and ground

construction of the language and specification of symbols

- a. Rules would be established by the standards body to direct the design of new symbols
- b. Consistency would be enforced for carry-over of learning from symbol to symbol
- c. The symbols would be independent of culture – so cultural knowledge would not be a prerequisite. The standards body would be multicultural and multilingual.



With those characteristics in mind, I'd like to take a few minutes to tell you about the basics of Blissymbolics.

- <play video>
https://youtu.be/hdiO_PYcOI8

I was intrigued with the regularity and predictability of this language 40 years ago when I was in college. I hope you feel some of that today. I also hope you see that this is a language that operates completely in the conceptual domain. It's not tied to nor dependent upon a particular spoken language or cultural knowledge.

Video transcript:

- If you think it's best to teach children to communicate by using a language instead of a collection of arbitrary images or shapes, I'd like to tell you about the language of Blissymbolics.
- Blissymbols were developed by Charles Bliss in the 1940s. He was looking for a language that could be learned and used by anyone on earth. His language is:

constructed – consciously devised instead of naturally evolved, ideographic – graphic symbols that represent an idea or concept, without phonology, generative – able to create an infinite number of concepts from an initial finite set. The language is purely conceptual. The symbols don't have to be translated into a spoken language in order to be understood. This has special implications for cognitively disabled individuals.

- Blissymbols are constructed using a few straight lines and simple curves. As such, they require less cognitive effort to explore and recognize. For tactile learners, this means that the symbols can be processed more quickly and reliably than symbol sets that are more complex in their construction.
- Basic Blissymbols are pictographic in nature. Their associated concepts relate easily to their graphic. For example, the “roof” shaped symbol represents protection. More complex concepts build on these simpler concepts.
- Additional simple shapes for simple concepts.
- More complex concepts can be constructed from the simpler concepts by overlaying one on the other. Here we see the arrow concepts overlayed on the enclosure and container concepts to convey new concepts like into, out of, get, and give.
- A female protector is a “mother”. A similar and consistent process is used for “father”. A container with water is a bath. A chair over water is a toilet.
- Concepts may also be created by appending one basic symbol to another. For example, all “feeling” words in Blissymbolics have the heart shape at their core. They are then qualified by appending other shapes to represent specific feelings. Feeling “up” means happy, while feeling “down” means sad. Positive feelings mean being good, while negative feelings mean being bad.
- Charles Bliss survived the concentration camps of World War II and was deeply affected by Nazi propaganda. When he created his new language, he wanted the language to clearly indicate when a concept was fundamentally an opinion rather than a fact. An adjective or adverb could lean either way depending on your point of view. He put an “unstable”, angled shape over these concepts.
- For Bliss, a volcano epitomized action and power, so he drew his action indicator from the shape of a volcano. He asked, “what does the eye do?” – it sees. “What does the ear do”? – it hears. And so on. This is how verbs are easily built from nouns.
- Our 3D-printed, Bliss Tactile Symbols reflect the two types of indicators in the top edge of the symbol. Verbs have an “action indicator” like top. Adjectives and adverbs have an evaluation indicator like top edge. Nouns have a rounded top edge, instead. In addition, you can use filament color to distinguish among the parts of speech. In this case, we've used colors from the Fitzgerald Key.
- These symbols can be enhanced by placing engraved text on the back surface, adding Braille to the sides, or including holes at different locations for mounting the symbol on a string.
- You can learn more about the possibilities of representing concepts through Blissymbols by visiting these web sites and pages.

Intro to Blissymbols (<https://volksswitch.org/index.php/volks-devices/bliss-tactile-symbols/intro-to-blissymbols/>)
Blissymbolics Communication International (<https://blissymbolics.org/>)
The Structure of Blissymbolics, Workshop
(<https://media.medfarm.uu.se/play/kanal/409>)
LA Blistric – YouTube
(<https://www.youtube.com/channel/UCvyU1me7kV4sUva9L391n9A/videos>)
(Book) Teaching and Using Blissymbolics (https://archive.org/details/OTUED_8-2-3-3/page/18/mode/2up)
(Book) Handbook of Blissymbolics (https://www.amazon.com/Handbook-Blissymbolics-H-Silverman/dp/B0054SLCYQ/ref=sr_1_2?dchild=1&keywords=Blissymbolics&qid=1620269984&sr=8-2)

Slides and notes are here: <https://volksswitch.org/wp-content/uploads/2021/11/Intro-to-Bliss-Symbols.pptx>
Associated web page: <https://volksswitch.org/index.php/volks-devices/bliss-tactile-symbols/intro-to-blissymbols/>

Blissymbolics Standards Body - BCI



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BCI

About BCI

How You Can Help

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Welcome

Blissymbolics is a semantic graphical language that is currently composed of more than 5000 authorized symbols - Bliss-characters and Bliss-words. It is a generative language that allows its users to create new Bliss-words as needed. It is used by individuals with severe speech and physical impairments around the world, but also by others for language learning and support, or just for the fascination and joy of this unique language representation.

Blissymbolics Communication International is a non-profit, charitable organization that holds the perpetual, worldwide rights for the use and publication of Blissymbolics. BCI provides leadership in the development of the system of Blissymbolics. Blissymbolics is offered for all to use under a choice of two generous licensing schemes - either a free, copyleft license, or a proprietary license agreement. See under [Licensing](#) for more information.

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Fun with Bliss

Animal Puzzles

Find the Country

What category?

Opposites

Banner Messages

Proverbs in Bliss

Resources

Symbol files

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Blissymbols are unlike any other graphic symbol set. They are curated by a multicultural, multi-language, non-proprietary standards body. When a new symbol needs to be added to the language, a collection of individuals ensures that the symbol adheres to the rules of symbol design and leverages the rest of the language. What process do you think is followed when they need to add a new symbol to PCS or SymbolStix?

The slide shows a screenshot of the homepage for Blissymbolics Communication International – BCI for short. This is the organization that curates Blissymbols.

(www.blissymbolics.org)

Blissymbols as Tactile Symbols



“Due to their simplicity, [features like] edges, outlines, and kinesthetic feedback are optimized in raised-line renderings of Blissymbols, which may facilitate recognition of tactile Blissymbols. In short, the conformational characteristics of Blissymbols results in stimuli that have minimal complexity (or low potential cognitive load) and when rendered as raised-lines have characteristics that may increase the efficiency of perceptual/cognitive processes involved in communication with tactile symbols.”

The potential for developing a tactile communication system based on Blissymbolics,
Mick D. Isaacson & Lyle L. Lloyd, *Developmental Neurorehabilitation*, 2015; 18(1): 47–58

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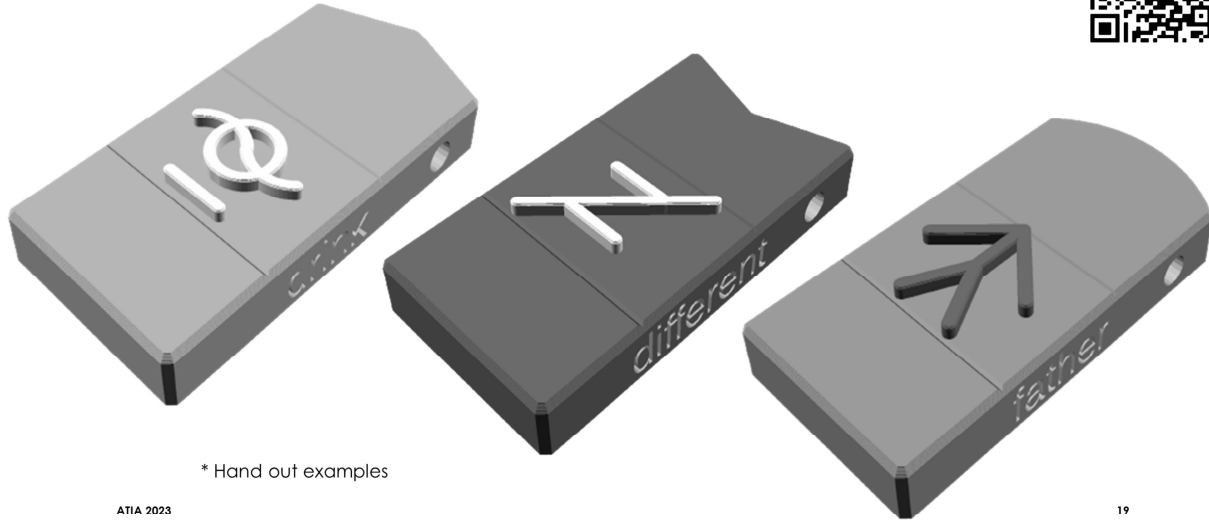
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In 2015, Isaacson and Lloyd saw something special in Blissymbolics that had them wondering about its applicability to the tactile domain.

In particular, they thought...

(<https://pubmed.ncbi.nlm.nih.gov/25325716/>)

Bliss Tactile Symbols (at Volksswitch.org)



This slide shows images of three of our Bliss Tactile Symbols. To drink, different, and father.

- We'd like you to have a "hands-on" experience with our Bliss Tactile Symbols, so we'll pass some out now. They're for you to keep and show to your associates.

(<https://volksswitch.org/index.php/volks-devices/bliss-tactile-symbols/>)

Available Free Resources: 242 ready-to-print tactile symbols



Including:

- The 36 Universal Core words from Project Core
- Gail Van Tatenhove's 205-word "Core Vocabulary List for Students with Intellectual Disabilities"

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touch, two, wake up
• Numbers - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Individual Tactile Symbols

Concept - (Part of Speech, Base Color, Graphic Color)

- afraid - (adjective, blue, white)
- after - (preposition, pink, black)
- afternoon - (noun, orange, black)
- again - (adverb, brown, white)
- aide - (noun, orange, black)
- all - (determiner, black, white)
- all gone - (adjective, blue, white)
- and - (conjunction, white, black)
- answer - (verb, green, white)
- arm - (noun, orange, black)
- ask - (verb, green, white)
- away - (adverb, brown, white)
- baby - (noun, orange, black)
- bad - (adjective, blue, white)
- because - (conjunction, white, black)
- before - (preposition, pink, black)
- big - (adjective, blue, white)
- body - (noun, orange, black)
- bottom - (noun, orange, black)
- boy - (noun, orange, black)
- break - (verb, green, white)

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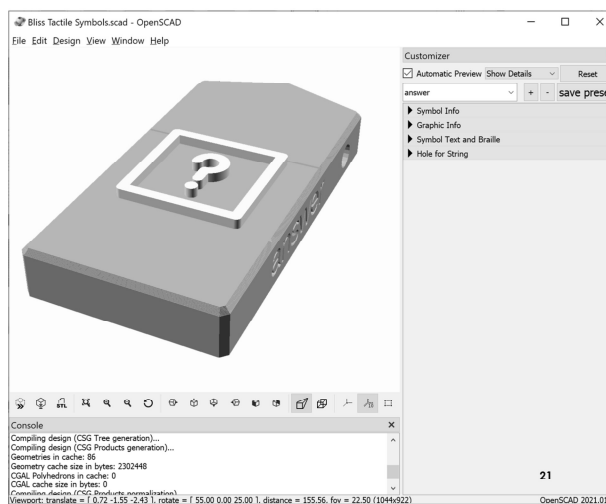
We've made 242 of these symbols free for you to download and 3D-print via the Volksswitch website. They span the 36 Universal Core words from Project Core as well as Gail Van Tatenhove's Core Vocabulary List for Students with Intellectual Disabilities.

The slide shows a screenshot of the Volksswitch webpage where you can download the STLs for individual symbols or as collections of symbols.

(<https://volksswitch.org/index.php/volks-devices/bliss-tactile-symbols/bliss-tactile-symbol-stl-files/>)

Available Free Resources: tactile symbol designer

A designer for customizing the ready-to-print symbols and extending the set to include any of the over 6500 free-to-use official symbols currently specified by BCI



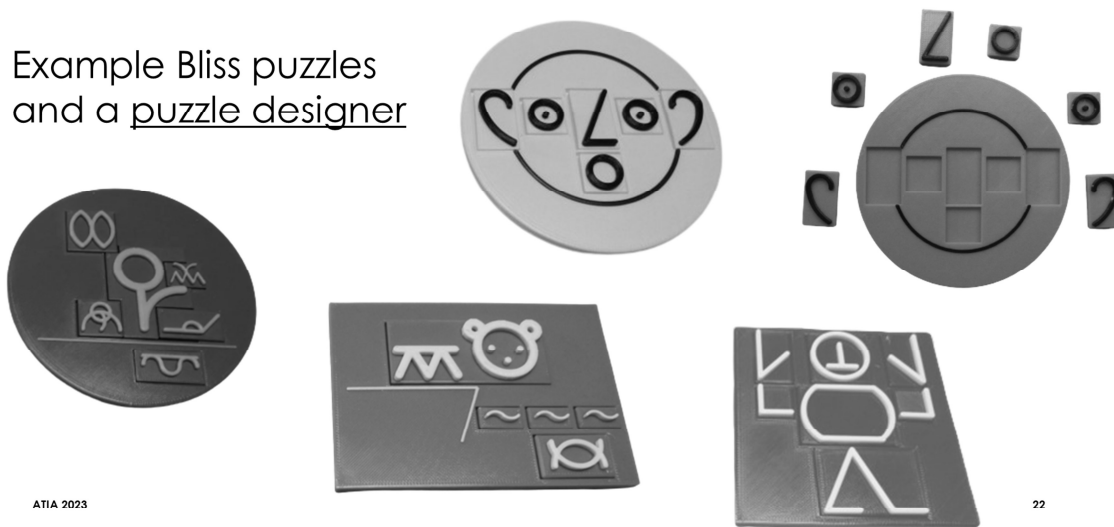
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We also provide a free tactile symbol designer that you can use to modify our initial symbol set, as well as to create new symbols based on the free graphics from BCI.

The slide shows an image of the tactile symbol designer's user interface. Modifying an existing design or creating an entirely new one is as simple as choosing options from pulldown lists and typing some text.

Available Free Resources: Bliss Puzzles

Example Bliss puzzles
and a puzzle designer



You can take advantage of the pictographic nature of Blissymbols to construct motivational tools like these puzzles – which are also 3D-printable.

The slide includes five images of four example Bliss puzzles. One picture shows a puzzle that has been disassembled.

Explorers, Challenge Tiles, and Puzzles description:

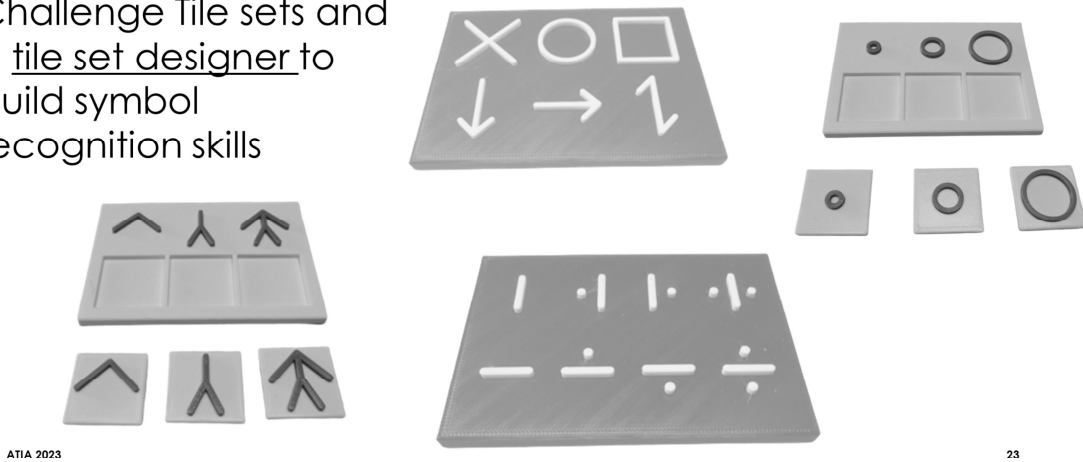
<http://bit.ly/3WM4USH>

Explorers, Challenge Tiles, and Puzzles designer:

<http://bit.ly/3fQStoe>

Available Free Resources: Explorers and Challenge Tiles

Challenge Tile sets and a tile set designer to build symbol recognition skills



3D-printed Explorers and Challenge Tiles can provide scaffolding for children who need to build their skills from simple tactile shapes to more complex ones.

The slide contains four images. Two example challenge tile sets, in white, and two example explorers, in color.

We provide a free, easy-to-use, designer to create these tools and the Bliss Puzzles, for yourself, based on your student's needs.

Explorers, Challenge Tiles, and Puzzles description:

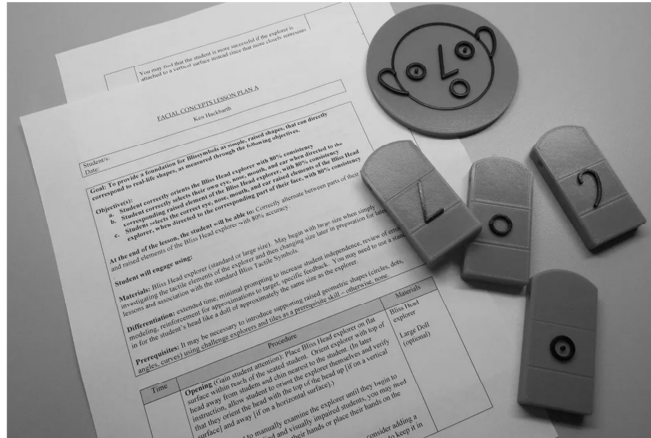
<http://bit.ly/3WM4USH>

Explorers, Challenge Tiles, and Puzzles designer:

<http://bit.ly/3fQStoe>

Available Free Resources: "Explicit" teaching plans & supplemental materials

A growing collection of ready-to-use supplemental materials to individualize learning opportunities for communication and literacy



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You can incorporate these tactile symbols into your classrooms in the same way that you've previously used traditional tactile symbols.

But we've taken the extra step of developing a few simple, "explicit" teaching plans and supplemental materials to help you get started.

This slide has an image of a documented teaching plan and the Bliss Tactile Symbols and Bliss Head Explorer used to support that plan.

Our set of teaching plans is small at this point. We'd love your help in extending the set based on your own learning and experience.

Explicit Teaching Plans page link:

<http://bit.ly/3EigUEB>

A View from the Classroom (Boots on the Ground)

- Heather Williams
- Shannon Paige

Speaking of the classroom, I'll now turn the presentation over to Heather and Shannon to share their knowledge about how these tactile symbols can impact students.

Considerations-Introducing Tactile Symbols

- Tactile symbols are one form of communication that can be added to any system
- Symbols can be alternative or supplemental
- Physical organization can be adapted based on individual needs (vision, mobility, sensory)
- Words are permanent until removed aiding in short term memory (they can be fixed in a location)
- Utilizes the power of touch, an underutilized medium,
- Tactile perception of the visually impaired is considered much sharper than that of a person with normal vision
- Elementary unit is the word which is how typical infants learn language

Everyone communicates and everyone communicates in diverse ways. We are all different. What makes this population we are targeting with tactile symbols unique is that their current form of communication is not working. They do not have a shared system. Maybe, their caregiver understands certain movements, vocalizations, or gestures but the caregiver is not around to interpret for the individual. Their current form of communication restricts their future potential. These are candidates for AAC. One form of AAC that should be included in the decision process is the tactile symbols. Until now, tactile symbols were made on the fly which reduced the consistency in their implementation. David Premack first introduced a variation of tactile symbols with chimpanzees back in the late 1960s and demonstrated that the chimpanzees could learn language using symbols. He taught the Chimpanzees production and comprehension. He taught them how to label, match, ask questions, and direct the actions of others using 3 to 4 word combinations with simple tactile symbols. He was very detailed in his procedures and his work was often referenced in the late 1970s when people started researching how to support children with disabilities in mainstream education following Public Law 94-142 in 1975. Greg Vanderheiden, Lyle Lloyd and Mary Ann Ronski referenced Premack's work in their initial research.

When you introduce tactile symbols, they are one tool in your toolbox to choose from. You never know when an emerging communicator will benefit from them so I

believe there should always be a set available as an option in your total communication package. They can be used as an alternative communication system all on their own, especially for those individuals with dual-sensory impairments as tactile perception is considered sharper in individuals with vision impairments. Or, they can be used as a supplemental tool. Many of my students with autism exhibited weaknesses in the area of executive function and were often overstimulated by auditory information even though they were verbal communicators. The symbols are perfect as manipulatives to reinforce verbal instructions when these individuals are overwhelmed by their environment. You can and should allow the individual time to look at, touch, and explore them. This reduces the load on their short-term memory. The benefit of these Bliss symbols is that you can organize them based on the individual. The symbols are concrete and can be fixed in a set position and you can choose which words you need based on the individual's needs. They are reproducible and there are unlimited options for words and word combinations. We have several different sets here for you to look at and think about

Communication System-Total Communication

- Movement
- Eye Gaze
- Gesture
- Object (3D)
- Vocalization
- Verbalization
- Sign
- Picture (2D)
- Words

As I stated before, everyone communicates in diverse ways and each of us has our own communication system. We identify people based on how they communicate. My children can accurately imitate my husband's movements and gestures and based on those 2 forms, anyone that knows him, knows who they are making fun of without a word ever being spoken.

We often hear the term total communication when supporting the development of communication. It is a system, not just a single tool. One tool should never restrict access to the other tools in the system. Each tool should be supportive in the system as a whole. And there should always be a low tech back up in that system. Your low-tech back-up is a pencil and paper.

Consider how you use each of these forms of communication to support the overall message you are trying to convey. You use movement by stepping closer or moving away from your communication partner. You might look at or look away from your communication partner to support your message. You gesture with your hands and arms for emphasis. You vocalize, like clearing your throat to gain attention when you enter a room, so others know you have entered. And how many of you have ever pointed to the picture of a haircut when trying to explain to your barber or beautician just how you want your hair cut. We all use a communication system. Are you supporting a system or are you restricting a system for the individuals you are working with? If your system is not working, have you

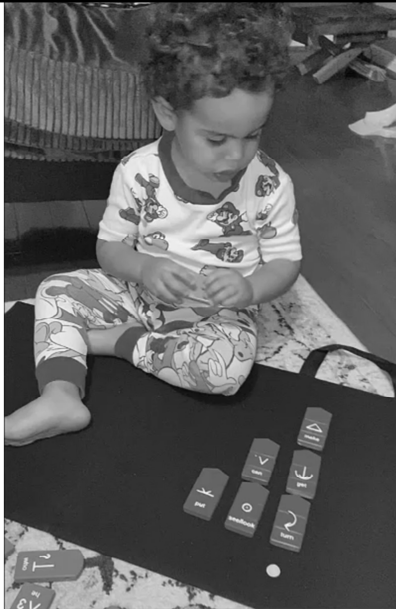
considered a new approach?

Where to Begin?

- Presume competence (if a chimpanzee can do it....)
- Observe-what does the individual already do?
 - give, wash, put, go
- Plan-There are no prerequisites, but you do need a plan
- Explicit Teaching-highly structured: engage, model, and practice
- Patience
- Document
- Build

So, you are thinking about these symbols, but you don't know where to begin, just do it... but plan. Go back and read about David Premack's work, look at Jane Korsten's Every Move Counts. We need to presume competence, but we know that this individual has not learned implicitly through mere observation of others communicating. We start by observing the student to determine what opportunities are available to practice and reinforce communication. What do they do, what do they like to do, and what do they do most frequently? Spend time with them. Develop a relationship. I will definitely do more for a person I like versus a person I don't like. Then model and practice without placing demands on the individual.

Just Play!



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Typical children were given the whole board with symbols.

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Premack started his work with social transactions. How often do we take the time to simply observe an individual learning language, without placing demands on them? Here are two neurotypical children interacting with the Bliss symbols. This was their first experience with the symbols. They were given the whole board of symbols and were provided no directions. Typical children hear lots of words before applying meaning to them. It seems as if the child without a disability acquires a language system overnight. In reality, the normal infant with intact motor, sensory, and mental systems spends 8 to 9 months engaging in interactions before they can intentionally communicate. It takes another 5 to 6 months for the child to develop a sophisticated prelinguistic communication system in which the frequency and forms of nonverbal communication gradually expand, resulting in one-word approximations. All of that is done through implicit learning.

Stremel-Campbell, Kathleen, and Charity Rowland. 1987. "Prelinguistic Communication Intervention: Birth-To-2." *Topics in Early Childhood Special Education* 7 (2): 49–58. <https://doi.org/10.1177/027112148700700206>.

Children First Exploration



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Notice the difference in exploration when the two year old child does not have vision or hearing

But what happens when a child has a sensory impairment? Or a dual sensory impairment and can't learn implicitly? They are still children. They need relationships and time to learn but we need to consider their differences and plan accordingly. They are children first! And they need expectations for future independence. And you need to start now.

It's Never Too Late

- Jazmin from Woodland, CA
- Age 20
- Communication and language background - bilingual Spanish and English, perceived limited receptive and expressive communication



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I would like to introduce you to Jazmin. She is 20 years old and lives in Woodland, CA. She is bilingual, understanding concrete statements in both Spanish and English. Jazmin uses some basic “I want...” statements, and over the past three years has learned to verbally express her emotions. Sometimes she is overwhelmed and will ask to listen to Vivaldi’s Spring from the Four Seasons Suite to help calm down.

When Jazmin came to our class, she relied on others to provide a timed transition between lessons and activities. People did not talk with Jazmin other than to tell her what to do and to tell her the timer is on to transition to another activity. Jazmin does not like to transition from one thing to another. In our class she rejected timers and refused to transition to a new scheduled lesson. Our VI specialist showed me traditional tactile symbols and how they could be used as a tactile schedule so that Jazmin could anticipate transitions throughout the day independently.

Jazmin showed us that she really liked the tactile schedule once she got used to it. While she was getting used to her new system she would pull the pieces off their backing, bend them, and bite them. We made the same tactile icons for Jazmin every single week for two and a half years. If we couldn’t replace them by the next day she would cry, scream, strike out at people, and attempt to bite. She showed us she valued her schedule greatly. But she needed a more durable solution.

JV - Blissymbols

September 2022



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Jazmin was introduced to Blissymbols as a tactile schedule – the Blissymbolics being a novel concept used in a familiar way, in this example as a schedule of activities that Jazmin will do that morning. It was easy for Jazmin to learn to associate symbols with actions. In this picture Jazmin has Blissymbols in front of her representing ‘walk’, ‘cooking’, and ‘piano’, reminding her of the sequence of events in her schedule.

She is not yet interested in learning which symbols are nouns, verbs, adjectives, etc. But she actively seeks to use this language to help her navigate her school day. We will keep asking her to expand her knowledge, and she will show us when she is ready to learn more. We have a 3D printer in our classroom and will support Jazmin expanding her vocabulary with Blissymbols for as long past her public education as she and her family want.

Jazmin – Bliss symbols and supplemental activities



November 2022

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JV using the premade lesson from volkswitch.org to learn body parts. Jazmin learned to match the icons to the face, and in turn to identify the icon to her own body part. Learning Blissymbol body parts makes it easy for Jazmin to show us if she is in pain or discomfort, two conditions which cause Jazmin to shut down.

Since starting to use Blissymbols in September 2022 Jazmin has increased her independent transitions between lessons, independently asks staff if she can have a break, identifies body parts, initiates communication, and has increased her speaking vocabulary. She is more confident and consistent in her communication.

Questions?

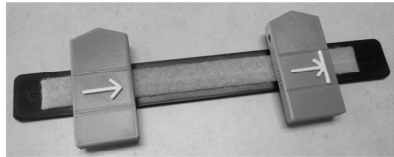
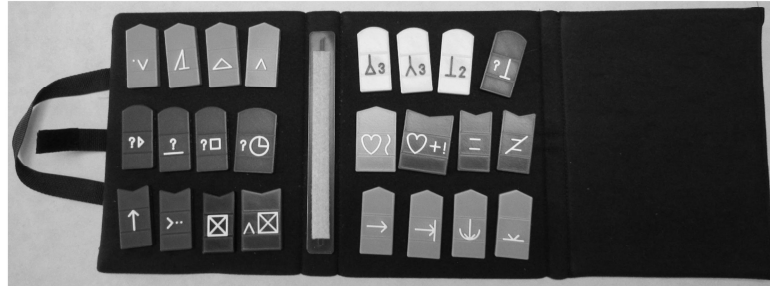
What questions do you have?

Extras...

In the time that remains, let's look at some third-party, and DIY, products that you may want to use along with our Bliss Tactile Symbols.

School and Classroom Management Tools

- Tactile Symbol Display and Management



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The company, Augmentative Resources, makes several products for the management and display of communication symbols. The two images on the left are of their Bliss Tactile Symbol Carrier that they created specifically for the display, management, and transport of our tactile symbols. The pictures show the carrier in both closed and expanded configurations.

The carrier has a rigid spine and padded separator that keeps the symbols from clacking against each other. In the picture, I've used the space of the rigid spine to attach a 3D-printed "Message Builder". The slide has a picture at the bottom of a Message Builder with the symbols for "go" and "stop" attached. You can download the free 3D-printable Message Builder STL file from the Printables website.

The image on the right is their trifold choice board.

Bliss Tactile Symbol Carrier link:

<http://bit.ly/3EeYqEF>

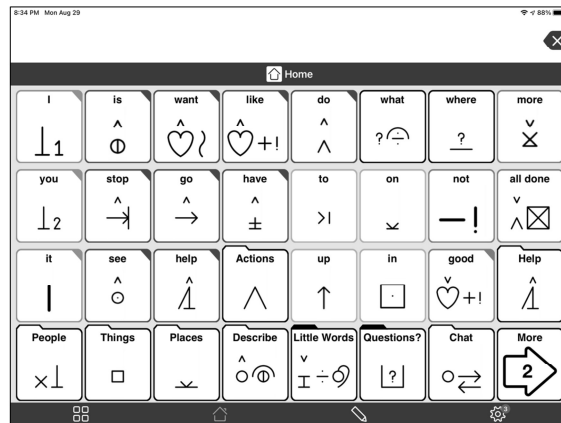
Message Builder link:

<http://bit.ly/3NMy7sQ>

Blissymbol use on AAC Devices



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If your favorite AAC software will allow you to place your own graphic images on one or more buttons, you can take advantage of Blissymbolics to create a consistent interface for your students. We support that effort by making the symbols for all 242 concepts in our set accessible via a webpage.

This slide includes a picture of TD Snap and a picture of Proloquo2Go. In both pictures the default button images have been replaced with their Blissymbol equivalents.

Graphics Files Download Page link:
<http://bit.ly/3zWJkRG>

The Voice It



- Can be used with the Bliss Tactile Symbols (pre-recorded voice files)
- Add sound to any object
- Entire books can be “voiced”
- \$130 in off-the-shelf parts
- Can be assembled with a screwdriver
- Record your own voice files
- Multi-language support



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The Voice It can be used with our tactile symbols to provide a multi-sensory experience.

The Voice It is a simple, DIY device that reads an RFID tag and then plays a recording associated with the word it finds on the tag.

You can build the Voice It in less than 45 minutes using about \$130 of off-the-shelf parts and a screwdriver. RFID tags can be purchased online for anywhere from 15 to 30 cents, each.

We provide free voice files for all of our core concepts in both English and Spanish - and adding a new language is a simple matter.

It's also simple to extend the recordings to add a voice to just about anything

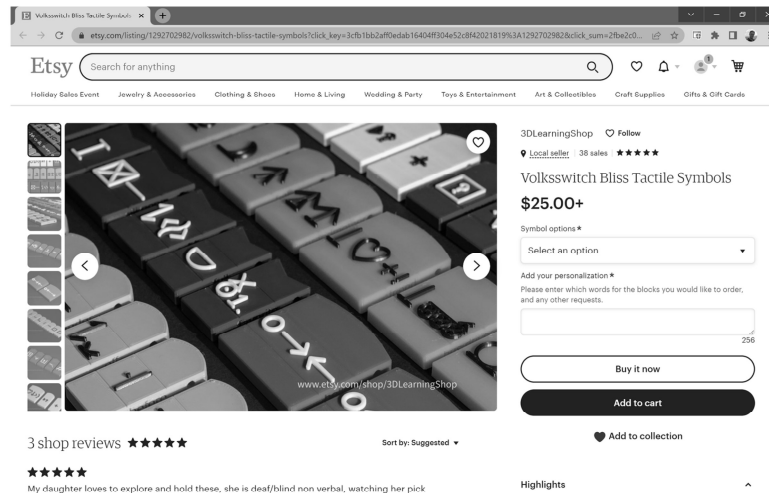
from a plush toy to a children's book

The slide contains a picture of an assembled Voice It box surrounded by Bliss Tactile Symbols.

Voice It device homepage link:

<http://bit.ly/3TA9Kjv>

Etsy Store: 3D Learning Shop



The folks at the 3D Learning Shop on Etsy have already made a business of 3D-printing and selling the Project Core, 3D-printed Universal Core words.

You may be more comfortable purchasing 3D-printed devices and symbols rather than make them yourself. For that reason, I contacted the 3D Learning Shop about printing and selling our Bliss Tactile Symbols as well as Voice It boxes – and they agreed.

This slide contains a screenshot of the Etsy page for the 3D Learning Shop highlighting one of their offers for printed Bliss Tactile Symbols.

Augmentative Resources and this Etsy shop are just there in case you need them. We are not financially connected to either one.

3D Learning Shop page:
<https://bit.ly/3NSGI2M>

Bliss Tactile Symbols and Voice-It Volunteers

- Andrea Newall
- Anitha Muthukumaran
- Angela Albrigo
- Heather Williams
- Justin Wintour
- Kathy Sledz
- Ken Hackbarth
- Sara Palmer
- Shannon Paige
- Tim Bellis



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This work represents the contributions of a team of volunteers.

Please come to the front and see
for yourself...

Ken Hackbarth - ken@volksswitch.org

Please complete an evaluation of our session in the ATIA App – THANKS!

Remember to apply for any of these CEUs: AOTA, ASHA, ACVREP, CRC, IACET

AVCREP CE Stop Code: green54

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That's all we have, so if you can, please come up front and check out all these devices and products. It's also a chance to ask any questions that you still have.

Please complete an evaluation of our session in the ATIA app and remember to apply for CEUs!

**** Leave Slide Up ****