

# Next-Gen Tactile Symbols – 3D-Printed Blissymbolics

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

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

I use the plural forms “we” and “our” because this presentation represents the work of a team of volunteer therapists and engineers. You'll meet members of the team later in the presentation.

As a volunteer, I have no relevant financial relationships nor relevant non-financial relationships to disclose.

## 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](http://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
- 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.
- 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 3<sup>rd</sup>-party tools for managing the symbols in the classroom

- I have all of these items up on the front table so please come up at the end of the presentation, check them out, and ask any questions you have.



## 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. They can also be useful when working with individuals who need help with executive functioning, have autism or don't respond to traditional systems.

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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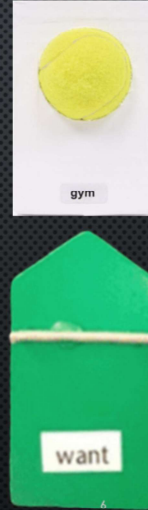
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- Traditional tactile symbols are typically constructed by gluing a physical object to a rigid backing.
- The physical object may be closely associated with the symbol's referent
- For example, the slide shows a plastic spoon glued to a piece of cardboard 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

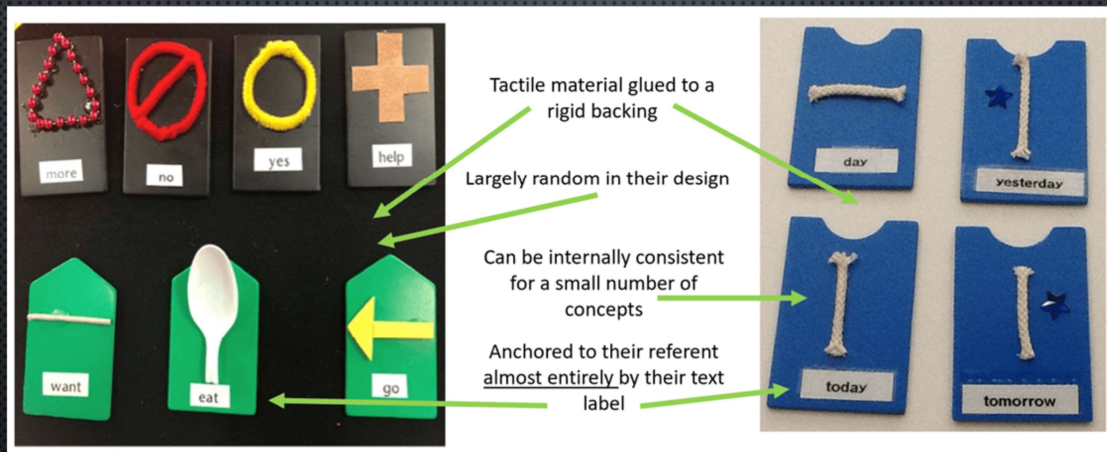
- Is a tennis ball really the best representation of gym class?
- Traditional tactile symbol sets rarely represent more than a hundred concepts.
- Anytime a symbol set is constructed for a small number of concepts, there is little or no motivation to base the design choices on a set of rules.
- Without 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 would a bead triangle represent the concept “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 extend the set 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. Now 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 and sturdiness

\* 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. An STL file is an input to the 3D-printing process.

- Because the symbols are 3D printed it's easy to produce exact copies of a design. Though printed from plastic, they're very robust and sturdy.
- I'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.

I'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 shape and the symbol's 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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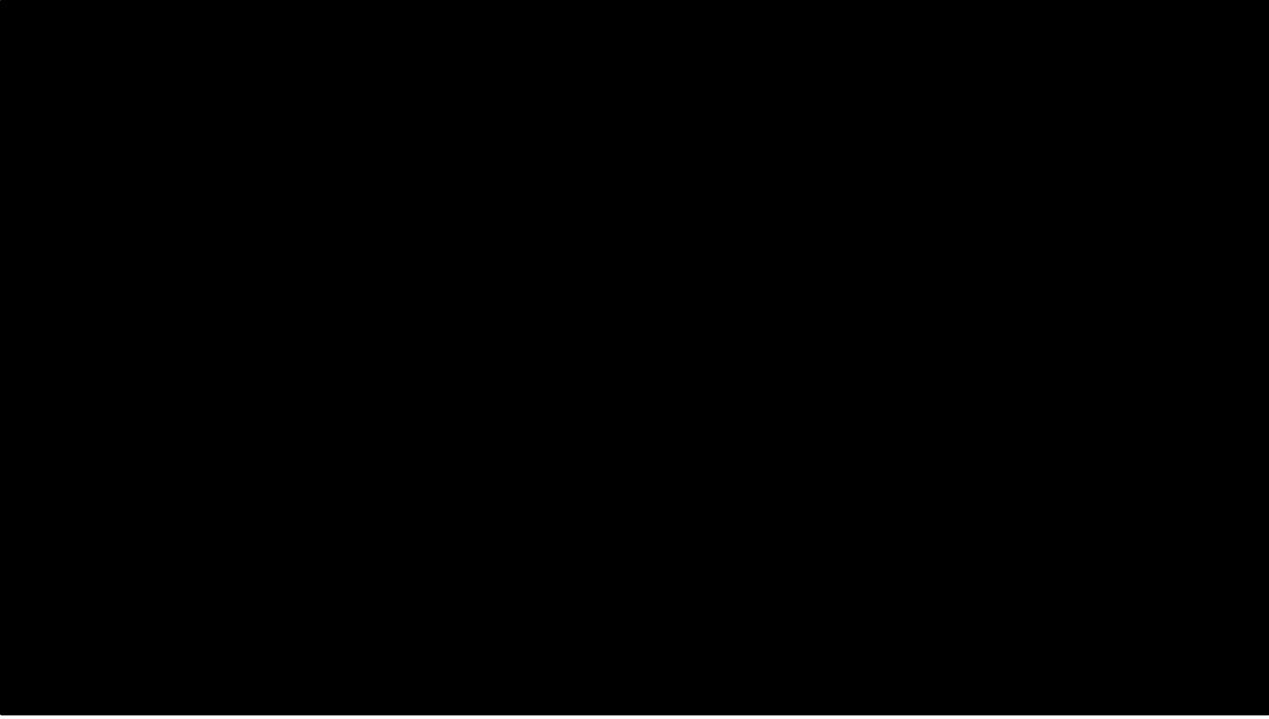
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If the previous tactile symbol systems are non-optimal, what would an optimal tactile symbol system look like?

1. First, it would utilize a Conceptual Language – as a result, there would be no required 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 would be in control of the amount of complexity – yet creating exact copies of your design would be as simple as 3D-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](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](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](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



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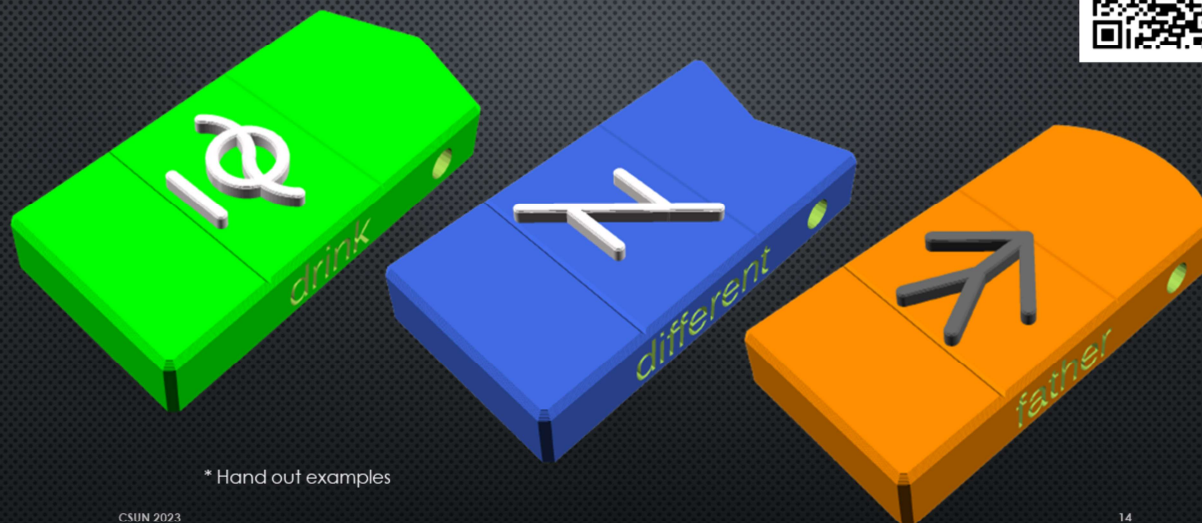
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In 2015, Isaacson and Lloyd saw something special in Blissymbolics that had them wondering about its applicability to the tactile domain.

In particular, they thought...

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

## Bliss Tactile Symbols (at Volksswitch.org)



\* Hand out examples

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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:

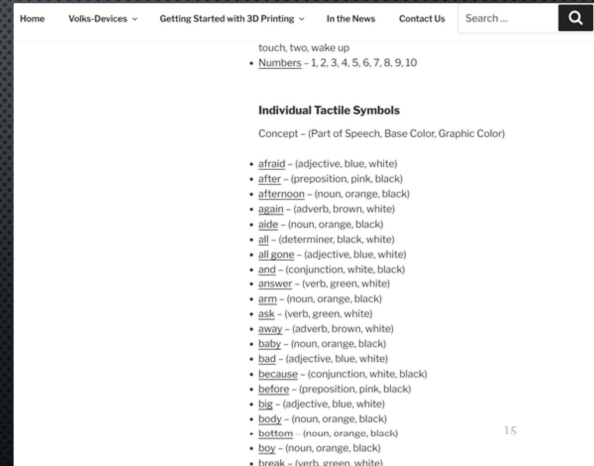
## 242 ready-to-print tactile symbols



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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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.

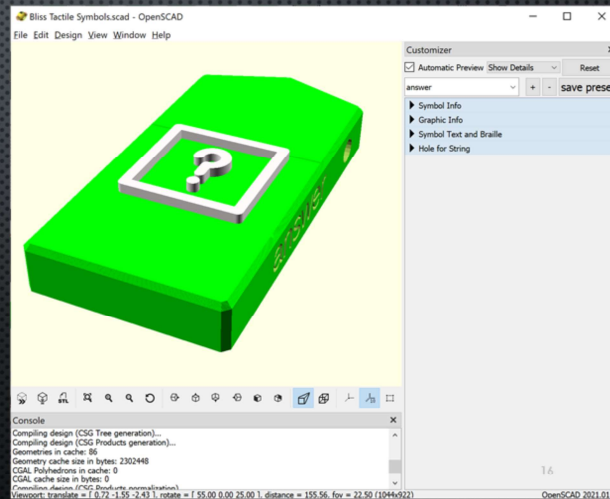
The slide shows a screenshot of the Volksswitch webpage where you can download the STLs for individual symbols or as collections of symbols.

(<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:

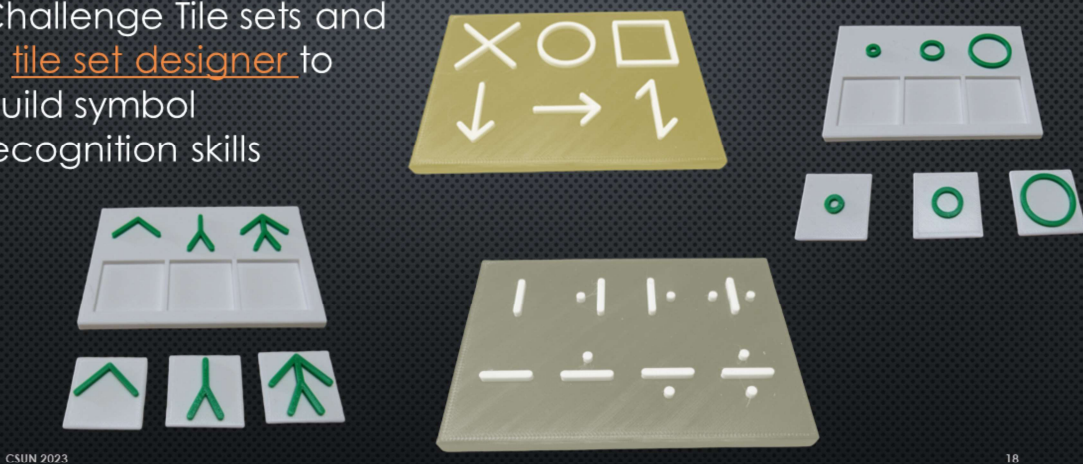
<http://bit.ly/3WM4USH>

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:

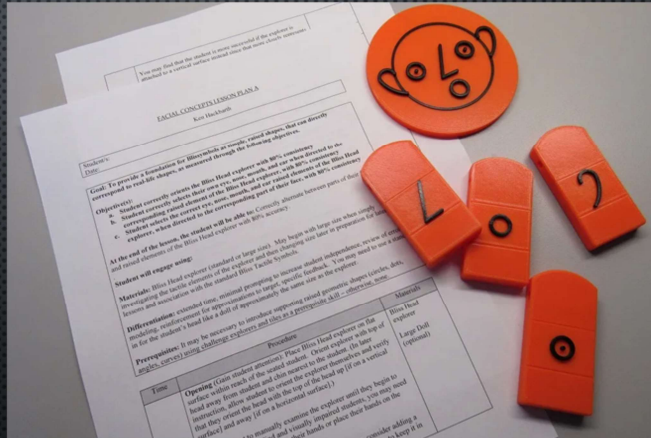
<http://bit.ly/3WM4USH>

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>



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

([https://youtu.be/-o24fY19\\_\\_l](https://youtu.be/-o24fY19__l))

Interview Transcripts:

**Describe the profile of a student with whom you are using, or anticipate using, the Bliss Tactile Symbols.**

- I've been trialing Blissymbols with a 20-year-old in my classroom, who is blind? She has, she has no eyeball in one eye and then she has retinal displacement and the other one. She also was diagnosed with an intellectual disability.
- The student is a primary kindergarten age student who has a variety of needs due to a rare genetic disorder due to her physical and medical needs. She's not able to access other communication. You know, your more typical communication systems.



- I would consider different types of children. Not just a student with a vision impairment. I'd consider those with multiple sensory impairments possibly vision and hearing. I would definitely consider any child – you often hear teachers say, “well he's too low”. And so, any child that I think maybe they're not ready to attend to some of the visual boards I would definitely introduce these. I know I've had a lot of students even with autism, that really, like to fidget and hold things. So, I think I would use these as a way to almost supplement, the communication with another system. I'm not thinking that I would ever use these by themselves, but more, as really, a complementary tool with other systems. I primarily work with classrooms. So, in a classroom setting to learn language.
- The student that I would use this kind of system with would be a student who [is] visually impaired with limited communication skills, limited verbal speech, who just kind of needs some fundamental beginnings of like beginning to communicate in a way that they understand.
- I think back to one particular student that I had, and she had fetal alcohol syndrome, and, with fetal alcohol syndrome, you've got really some atypical learning patterns but one of the things is that contrast and so for her, she always liked to fidget, and she almost needed something in her hands to hold and I would have definitely used these with that child because they would have been really beneficial. So, for her that's one of the first classrooms we're going to target because she is vision impaired, and she has mild hearing impairment and then she got cognitive impairment and she's also had a very transient lifestyle, so life has been very inconsistent for her, so we want to have a very consistent system and we're starting out with 20 of the symbols.

**When would you use the Bliss Tactile Symbols with a visually impaired or non-speaking student?**

- So, we wanted something that was easy to make that was long lasting that could be you know carried by the student themselves and also on top of that like something that could help, develop the the students' language and literacy. So Blissymbols fits all of that. Blissymbols can help like increase languages and to answer like predetermined questions during a lesson. That's like one of the main uses that my student, that my student does also the use Blissymbols as a schedule. So, they can anticipate what's coming next and they can also anticipate what's expected of them.
- So, we wanted something that was easy to make that was long-lasting. That could be carried by the students themselves again, they're very durable, which is another huge advantage because I have a lot of sensory-seeking students and sensory-reliance students in my classroom who enjoy using the tactile symbols for, you know, to help them focus during the day. But if one of those

gets lost, I can put it in the software and 24 hours later. I've got it again for her to use.

- I feel it's really important with these students that we use the symbols to communicate with them as well as for them to be able to communicate with us. And, you know, for so many of these kiddos with the reduced Vision, all of a sudden, they're just moved, or they arrived at places, and they don't know. So, we're trying to use the symbols more of like that go and finish to represent things that are kind of more abstract.
- So why would... I would pick it because trying to get kids to kind of just tap on something that does not differentiate in any sort of way such as with any kind of communication device where it's just a flat button. It's not as meaningful, they don't want to explore, it takes so much effort, to try to get them to touch something as opposed to them being having a chance to just feel something and run their fingers over it and explore it independently, try to get them to touch something on their own, rather than me doing having them like, hold their hand, hand over hand. I'd rather them start to develop their independence that way.
- Many of the students that we work with, especially some of the low incidence students, they don't have enough experience, holding a variety of objects, and I think that this might be a more engaging way to start using a language system rather than like a regular typical communication board. You know, my hope is that we're starting with very young children when we're introducing this, although I do have a certain classroom right now that I'm trying to introduce it. Actually, we are introducing it and it's a middle school girl, who has a vision impairment and cognitive disability, and a lot of behaviors right now, and she needs a form of communication. So, I'm working with some teachers there to try to introduce it. I would like to see a set in every, every classroom that is self contained a supplement, and there's a lot of flexibility with them. So, I would try to match some of the vocabulary being used in the classroom, so it's an alternative and not necessarily one or the other. I think we often hold our students with disabilities to a higher standard where they only get one means of communication and I would look at this as just a powerful tool as a part of the communication system. Any child, that is not responding to a typical communication system or any child who's slowly progressing on another communication system, I might supplement it with this as a tactical means to support communication with the system, every classroom that has those students that somebody thinks doesn't have potential, I would definitely want to set of these in there.

**What advantages do you see in using the Bliss tactile symbols with students?**

- So, she and the past had been using symbols that we created using the Texas

School for the Blind and Visually Impaired Dictionary and those were working, okay, but their handmade. And not the same person all the time, can make the symbols. So, there is room for inconsistencies based on how we perceive the symbols and then also the materials that are available to us at any given time. Everyone else in my class has a diagnosis of intellectual disability or multiple disability and they're interested in the symbols, and that they want to learn with my 20-year-old student, shows me the accessibility that Blissymbols have. They've been through the washing machine and the dryer. They've been run over. They've been thrown across the room and they're still usable.

- So, the more we looked into this the beauty of the Blissymbols is that it exists. You know, it's an existing system or whatever and it's always easy to create a new one that's already standardized instead of starting over and recreating. The consistency is what's really nice. As they move to programs, that part you know, is going to remain the same. Their size is nice. There are a lot of things that already exist out there that are tactile, if you will, symbols. They can often end up being very big. So, the size of these is perfect. That they can always be with the student is important. I also like that the amount of information on them is just enough. Often there's too much on things. Students can end up being distracted versus getting the needed information.
- They seem more inclined to touch it. I think that has to be the biggest thing. They seem more inclined to explore it on their own without me having to constantly grab their hand and be like, "You push this button, you don't know where it is, don't know what it looks like... push this button." As opposed to, they put their hand over it and they just... Even touching it sometimes - because I have it on top of an AAC device. They put their hand over it, and they explore it, and it triggers the sounds, and now, we're linking sound to symbol, and I love that!
- You know, one of the benefits to the Blissymbols is that it's a generative system. There's so many options, it's a full vocabulary system. There's 3,000 [actually 6,500] symbols at our fingertips, that we can produce. So, there's nothing that we can't work on to teach that child language. I like these particular tactile symbols. Because, well, they're easy to hold. So, it's engaging. It's something to hold. You know you're always trying to find different manipulatives to get kids interested and our kids often are... they don't have the opportunity to manipulate things. You really do need that more simple shape. And so, one of the advantages of the advantages to the Blissymbols is they're very simple shapes, and when you combine the shapes, then it actually makes more generative language. I just think that's just think it has so much potential. I am really excited about them.



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.



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:

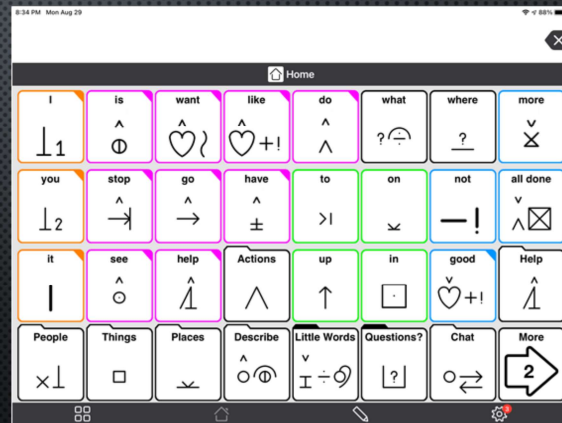
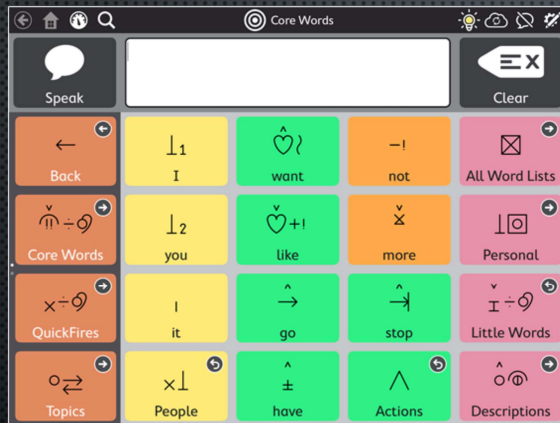
<http://bit.ly/3EeYqEF>

Message Builder link:

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



# Blissymbol use on AAC Devices



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 in 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 concepts in both English and Spanish - and adding a new concept or even a new language is a simple matter.

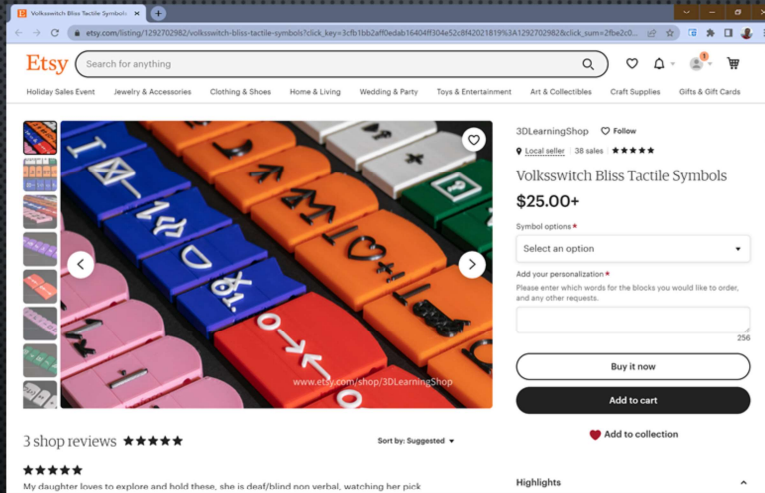
It's also simple to extend the recordings to add a voice to just about anything from a plush toy to a children's book

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



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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 making 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.

Note that Augmentative Resources and this Etsy shop are included in our presentation on the chance that you might want to take advantage of their services. 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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As I said at the start of the presentation, this work represents the contributions of a team of volunteers.

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

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 may have.



## Ken Hackbarth ([ken@volksswitch.org](mailto:ken@volksswitch.org))

Is the president of Volksswitch.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.