

CONTINUING EDUCATION for Occupational Therapists

ORGANIZED VOCABULARY: AUGMENTATIVE-ALTERNATIVE COMMUNICATION

PDH Academy Course #OT-1503 | 1.5 CE HOURS



This course is offered for 0.15 CEUs (Intermediate level; Category 1 - Domain of OT: Instrumental Activities of Daily Living; Category 1 - Domain of OT: Activity Demands; Category 1 - Domain of OT: Performance Skills).

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Course Abstract

This Intermediate level course visits the often-contentious topic of vocabulary selection and organization in Augmentative-Alternative Communication (AAC) devices, touching on vocabulary organization, types of vocabulary, and their application to commonly-used AAC systems.

Target audience: Speech-Language Pathologists, Speech-Language Pathology Assistants, Occupational Therapists, Occupational Therapy Assistants

NOTE: Links provided within the course material are for informational purposes only. No endorsement of processes or products is intended or implied.

Learning Objectives

By the end of this course, learners will be able to:

- ❑ List six points supporting the need for spontaneous novel utterance generation (SNUG) in Augmentative-Alternative Communication (AAC) systems
- ❑ Identify challenges related to vocabulary organization in AAC systems, and list pros and cons of three organizational methods
- ❑ Recall definitions and examples of core vs. fringe vocabulary
- ❑ Recognize the key concepts involved in core vocabulary AAC systems
- ❑ Recognize the key concepts involved in pragmatically organized AAC systems
- ❑ Identify ways that the course material impacts the practice of Occupational Therapy

Timed Topic Outline

- I. Achieving spontaneous novel utterance generation (SNUG) (5 minutes)
- II. Organizing Vocabulary (10 minutes)
- III. Types of Vocabulary (15 minutes)
- IV. Core Vocabulary Augmentative-Alternative Communication (AAC) Systems (20 minutes)
- V. Pragmatically Organized Communication Systems (25 minutes)
- VI. Final Thoughts & Conclusion (5 minutes)
- VII. References, Additional Resources, and Exam (10 minutes)

Delivery & Instructional Method

Distance Learning – Independent. Correspondence/internet text-based self-study, including a provider-graded multiple choice final exam. *To earn continuing education credit for this course, you must achieve a passing score of 80% on the final exam.*

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Course Author Bio & Disclosure

Susan Berkowitz received a B.A. in Psychology from Clark University, an M.S. in Speech-Pathology and Audiology from Tulane, and an M.Ed. in Education Administration from California State University at Fullerton. She also has extensive graduate background in Special Education and Applied Behavior Analysis, and has worked with children with autism for more than 40 years.

Susan has worked in a variety of settings as a SLP, a Director of Education, and a Chairperson of the Speech Pathology Department. Her career has taken her to public and private schools, developmental centers, group homes, and adult day programs. She currently runs her own private practice in San Diego, providing Independent Educational Evaluations in speech-language, AAC, and Assistive Technology, as well as consultation and staff training. She presents at a variety of national conferences and provides workshops in AAC, autism, and literacy.

DISCLOSURES: Financial – Susan Berkowitz received a stipend as the author of this course. Nonfinancial – No relevant nonfinancial relationship exists.

Achieving spontaneous novel utterance generation (SNUG)

“...a child who uses speech will independently select the words she wishes from the vast array she hears/uses every day. A child who uses AAC will independently select the words she wishes to use from the vocabulary other people have chosen to model and, for aided symbols, made available for her to use.”

~ Porter & Kirkland

Those of us who speak are rarely conscious of the fact that all of the words we use are stored, somehow, in our brains; for us, when we need a word, it is immediately available. Unless we are getting old – or have word retrieval problems for any other reason – we don't think about how to find the word when we need it. Nor do we routinely go through the process of thinking about what category the word is in, what the word is related to, what type of a word it is, and where the words are stored for this communicative intent.

However, AAC users continuously go through this process when communicating: our language learners with the most complex communication needs are required to go through the most complex process to find and construct their messages. So it becomes our job to choose the vocabulary to which they have access, assure that it is sufficient to meet all of their communication needs, and decide how to organize it so that they can access and use it efficiently.

According to the American Speech and Hearing Association (ASHA), the most effective approach to augmentative communication is one that allows for spontaneous novel utterance generation (SNUG). SNUG allows the AAC user to say whatever he wants whenever he wants.

ASHA's website lists the following six points supporting the need for SNUG in AAC systems:

1. In *normal language development*, young children begin to speak using individual words and word combinations, not full sentences. As language develops, children apply the rules governing the sequencing of language's basic units (i.e. words, word endings, prefixes, etc.) to express meaning for a specific communication situation. AAC uses these same basic rules of language.
2. The vast majority of the sentences we use in our daily communication are sentences that we have never used before in our lifetimes. Furthermore, those *sentences have never been spoken by anyone in the history of mankind*. This being the case, how could we possibly store in advance the sentences that someone else may wish to speak in the future?
3. Casual observations of the communication of people who rely on AAC can be made at the many

events at which they gather, including conferences and meetings. *Pre-stored messages are rarely used in conversations* occurring in the natural environment.

4. Statements by people who rely on AAC clearly indicate that they *do not find pre-stored sentences useful* for most of what they want to say. Ray Peloquin is typical: “95% of the time, I find myself having to create a sentence, and that’s what takes time.”
5. *Logged language samples* of people who rely on AAC provide the strongest evidence. In various contexts, including clinical and natural conversation settings, logged data suggest that individuals communicating at the highest levels use pre-stored utterances for less than 2% of communication.
6. In an Australian research project, Sue Balandin and Teresa Iacono asked speech-language pathologists to *predict the topics* that would be useful to employees in a sheltered workshop during breaks. The success rate was dismal, less than 10%. If sentences were pre-stored based on these predicted topics, the sentences would have little relevance to the actual conversations occurring.

AAC needs to be approached with the idea that the user does, indeed, have his own unique thoughts he wants to express – and that these thoughts are valuable.

In order to maximize SNUG, vocabulary selection is of prime importance. And once we have chosen the vocabulary, we need to consider how to organize it. (ASHA: <http://www.asha.org/public/speech/disorders/CommunicationDecisions/>)

Organizing Vocabulary

The prioritization and organization of vocabulary in AAC systems has been hotly debated for decades.

As seen above, both research and comments from AAC users with access to and usage of robust AAC systems tell us that pre-determined messages – though widely used in the past – rarely meet the needs of the AAC user. For example, consider a *Food* page, with the message “*I want an apple.*” The user has no means by which to say: I don’t want an apple, I’m tired of eating apples, someone took my apple, my apple fell on the floor, this apple is rotten, I want something different. Caregivers may feel the individual is being difficult by pushing or throwing the apple away, when he may simply be trying to communicate in the absence of suitable vocabulary. On the other hand, putting each of those possible messages on the page would take up too much “real estate” – too many spaces on the display – leaving no room for other foods.

ASHA’s AAC Glossary contains the following: “Communication is based on the use of the individual words of our language. True communication is spontaneous and novel. Therefore, communication systems cannot be based significantly on pre-stored

sentences. Communication requires access to a vocabulary of individual words suitable to our needs that are multiple and subject to change. These words must be selected to form the sentences that we wish to say.”

We know that, while some quick whole messages are needed for social interactions where speed is important, relying solely on predetermined messages is ineffective. The AAC system must allow for genuine message construction, and needs to contain vocabulary for a variety of functions.

Access to the words with which to communicate is important, and navigation is key to that access. There is rarely sufficient vocabulary on a single page for the user to express everything he wants – but once the words are on more than one page the user has to navigate through them to find the word he wants to use. Navigation increases the user’s cognitive load: he needs to remember the steps required to access a specific page or word, which may cause him to lose his place, forget what word he was looking for, or lose track of the message he was constructing. Students with motor impairments face an additional challenge, as they focus on two difficult tasks: language production, and the specific motor movement required to navigate.

Choosing the words to put into the system is another important consideration. Which words will the user need? And once the list of words is generated, how should they all be arranged in the AAC system?

Case in Point:

Robin Parker (PrAACtical AAC blog) once suggested that a way to conceptualize the difficulties of vocabulary organization is to write down all of the words an individual might need on 3x5 cards.

Pull out the words that should always be immediately available. Sort the rest into categories. Then note the size of the piles of cards. Sometimes a few words don’t seem to go with any particular pile. Sometimes there are words that could go with more than one pile. And some piles might be too big to put onto one page – so now those need to be sorted into smaller, related piles.

Once the category piles are made, consider both the number of pages in the individual’s system and the number of buttons per page. Does the number of piles matches the number of buttons allocated to a specific page? If not, you might need to combine some categories, which might create additional subcategories.

Once words have been selected and assigned to a page, consider how they will be arranged. They should be placed in a way that is meaningful and useful for the individual – and remember, ideally they will not be moved around. Moving from left to right mimics reading, and can be a good way to go. But if you have a motorically impaired user who can’t reach to one side or the other, placing high frequency words on the easier-to-access side makes more sense.

Clearly the concept of vocabulary organization is complicated!

AAC users tell us that the most important concepts for them in AAC use are the ability to say exactly what they want to say, and say it as quickly as possible (AAC Institute 2009). The ability to do this is dependent upon the way in which language is represented in the AAC system.

Available methods of AAC representation and organization include single meaning pictures, alphabet/word/ keyboard based systems, and the semantic compaction Minspeak symbols used in Unity-based systems (made by the Prentke Romich Company).

Single meaning pictures include photographs, standardized symbol sets (such as Picture Communication Symbols from Mayer-Johnson, Symbol Stix from News2You, and Smarty Symbols), pictures culled from the internet or magazines or package labels. These are usually the first symbol sets used in AAC systems.

Single meaning pictures can be difficult to learn for more abstract words: many words are difficult to represent with a symbol and thus are not transparent to the user or his communication partners (use of labels is standard and helps the partner, if not the user). On the other hand, other researchers report that users learn to discriminate the symbols through repeated use; they further point out that the 1:1 correspondence of symbol to spoken word is

useful in literacy teaching, where there is also a 1:1 correspondence of written to spoken word.

The number of pictures the user needs to learn corresponds exactly to the number of words in his vocabulary. As the vocabulary increases, so does the amount of symbols. This brings us back, again, to the problem of how to house and organize all of these words in the AAC system.

Alphabetic systems depend upon the AAC user being literate. These systems include use of spelling, spelling with word prediction, use of whole words, and use of abbreviation expansion.

Use of spelling requires the user to spell out every word that he wants to say. This can be slow, depending upon how quickly the user can use a keyboard via his particular access method or how quickly his partner can scan through the alphabet and record each letter. (As anyone knows who has read or seen the movie *The Diving Bell and the Butterfly*, the memoir of publisher Jean-Dominique Bauby, this method can be painfully inefficient. In real life Bauby became locked-in after an accident, and “wrote” his entire book with a partner who scanned through the alphabet and recorded each sentence, one word – one letter – at a time.)

A computer-based system that provides word prediction will begin to “guess” the word the user wants as soon as he begins typing the first

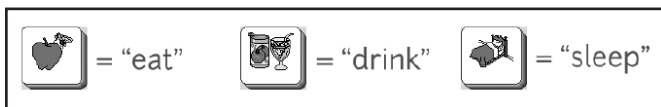
a	an	he	am, are	ask	be	been	bring	can	about	all
her	I, me	it	come	could	did	do	does	doesn't	and	always
my	him	she	drink	get, give	go	had	has	have	almost	as
that	the	these	is	keep	know	let	like	make, me	at	because
they	this	whose	put	say	said	see, seen	send	should	but	for, from
what	when	where	take	tell	think	thought	want		how	if, in
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n		o		p		qu	r	s		t
	u		v		w		x		y	z
1	2	3	4	5	6	7	8	9	10	11
12	20	30								
sun	mon	tues		please	thank you	going out		start over		
wed	thurs	fri		mr	mrs	miss		end of word		
sat	sun			mom	dad	doctor				
after	again	any	even	every	have	just	more	only	so	some
soon	there	very								

Figure 1: Sample of a word and alphabetic-based board

letter. Different systems offer varying numbers of “prediction” words, and most will learn the words an individual uses most often. Word prediction is meant to enhance typing rate, but many AAC users find it distracting. Phrase prediction is now available on some software.

Whole word methods print the words on the spaces for the user to scan. Abbreviation expansion allows the user to store frequently used messages and to access them by typing 2-3 letters. (Figure 1)

Semantic compaction/Minspeak uses multiple-meaning pictures in short sequences to represent vocabulary. It presents a restricted number of symbols, and relies upon systematic rule-based conventions of sequencing these symbols to create core words. For example, the picture of “apple” is used to represent apple, eat, hungry; depending upon which other symbol(s) it is paired with to determine part of speech.



A beginning communicator might start with a Unity vocabulary where one picture represents one word



A more advanced communicator might use a Unity vocabulary that uses short sequences of pictures to represent words or phrases

A single display holds these symbols and limits navigation while enhancing opportunities for learning through motor patterns. Learning through motor patterns has been identified as important with most AAC users, and especially so for students with ASD whose difficulties with sensory processing and frequency of dyspraxia make motor patterning crucial. In fact, learning through motor patterning is apparent in all our lives – piano playing, driving a car, typing and texting. Initially, in learning a new skill or motor pattern, the learner needs to pay attention to the process of learning the motor skill/pattern, and consistency is variable. In the next stage, given support to refine skills, the learner becomes able to correct errors. After significant practice, the learner is able to be independent without concentrating on the movement itself. Many AAC users whose vocabulary is unstable and constantly moving are unable to reach this independent stage because they are always stuck at the initial stage of having to pay careful attention to their movements all the time.

There is a consistent strategy for using picture patterns for words that are not easily reprinted by pictures;

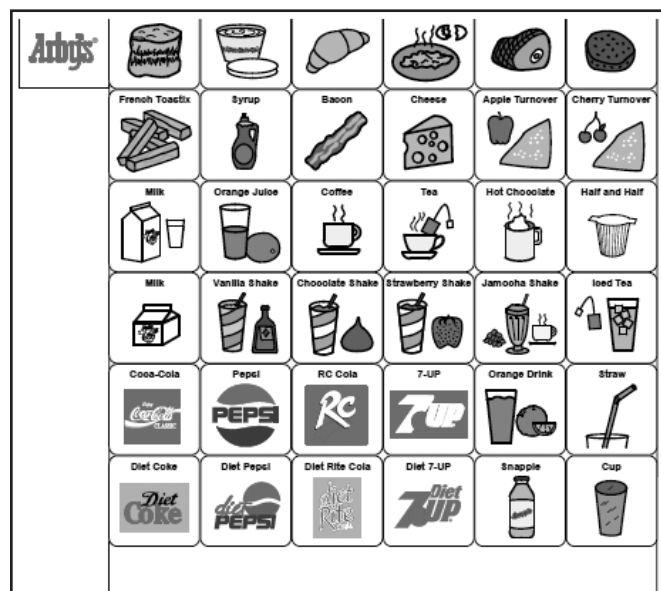
likewise, there is a consistent strategy and pattern for including growing vocabulary. Vocabulary is organized in a way that provides access to a large group of core words without needing to navigate through pages, yet provides specific strategies for retrieving additional vocabulary. The rate of vocabulary access is faster than with spelling. Semantic compaction does not require literacy, the symbol set is small, and vocabulary begins with core words (Romich, Vanderheidin, Hill, 2000 - AAC Institute).

Most effective AAC users report that they use a combination of methods. The ability to be flexible and to tailor the AAC component to the partner and context is important.

Types of Vocabulary

Speech-language pathologists often tend to think of vocabulary in terms of categories and functions. We also look at semantic relationships in terms of synonyms and antonyms, describing and defining words (which take us back to categories and descriptors).

Categorical and activity-based systems, where vocabulary is organized into pages by category or topic, are still widely in use. A school page, for example, might be created to hold school vocabulary such as the names of items found there (book, whiteboard, pencil, teachers’ and friends’ names). A zoo page might contain the names of all of the animals there, and phrases such as “I want to see...” Most of the earliest communication books – and many still – are built around basic categorization: things to eat and drink, things to wear, toys to play with, people to name, places to go, some feelings, usually colors and shapes, sometimes letters and numbers.



Activity-based page from Mayer-Johnson’s Print n Communicate book

There continues to be a place for organizing vocabulary that way for specific topics: these systems can work when the interaction is very predictable and the user isn't going to give his own thoughts or ideas. Unfortunately, that is exactly what we need AAC users to be able to do.

How do these systems allow users to combine vocabulary into phrases and sentences? How do we get beyond labeling and requesting with these vocabulary sets?

In contrast to the activity or category style of communication systems, language-based systems organize vocabulary based on how the words are used to construct linguistic messages. They provide the AAC user the opportunity to say something new or self-selected, and allow the user the flexibility to communicate his own unique thoughts.

A developmental concept to consider is the phenomenon of babbling. All young children do it as they are learning language. And, as words form, they put them together in ways that may appear wrong to us, but are "right" for them as they have perceived the rules, until they acquire a better understanding of those rules. But when we provide only whole messages or single nouns that cannot be combined – or even nouns and verbs with very limited connectability - we don't allow for any way for AAC users to experiment like that.

Two studies (among others) discussed the over-emphasis on naming vocabulary:

Berkowitz (1988) analyzed the language samples of a group of children living at that time in a state developmental center. The conclusion was that not enough time was being spent in intervention with children with severe developmental disabilities on development of expanded functional vocabularies.

Adamson et al (2003) focused more specifically on vocabulary selection for teaching AAC use to developmental disabled youth. They, too, discovered the limiting nature of noun-based instruction. They concluded, "... the study has an important clinical implication regarding initial vocabulary selection. Our findings suggest that the symbol vocabulary that youths with severe mental retardation can learn may have been underestimated by limiting their composition to concrete nouns. Practitioners may wish to expand their initial vocabulary selection to include social regulatory symbols. The provision of such vocabulary may facilitate symbol development, community inclusion, and ultimately alter perceptions of an individual's competence."

Speech-language pathologists should be comfortable with the thought of teaching expanded vocabulary and syntax. Vocabulary and syntax instruction is at the heart of what many of us do much of the time. AAC users need to be taught more kinds of words and how those words are related.

Research tells us that there are two types of vocabulary: core and fringe.

Core vocabulary is comprised of high frequency words that are multi-purpose and versatile, and is independent of cognitive ability. Fringe vocabulary contains words that are used infrequently and are not flexible or versatile. Core words are a small number of words that are applicable across place and topic; whereas fringe vocabulary contains a very large number of words with less applicability. Core words are used frequently, while fringe words are used less frequently. Core words are used in multiple contexts and environments; fringe words are less applicable and may be used only in some contexts. Core vocabulary includes a variety of parts of speech, where fringe vocabulary contains largely nouns.

Approximately 80% of words used in a language sample of 100 words will be core words. Since many of the core words will have been repeated, there will actually be a small number of words used. Only 20% of words used in the 100 word sample will be fringe words. The number of different words used will be large, since fringe words are not repeated as often as core words.

Based on this research, many see the function of the AAC vocabulary as providing a small set of consistent and predictable words that occur often and comprise 80% of spoken messages. Core words provide the basic structure of our messages, where fringe words provide individualized details. The AAC user is able to say many things with a core vocabulary, but may be limited to single word responses with only fringe words. Core vocabulary AAC organization provides an organized vocabulary set the users can use across environments and contexts, and that intervention can target in any context.

Proponents of core vocabulary use posit that the hours spent providing unending lists of content-specific vocabulary are wasted. Baker, Hill, and Devylder (2000) ask why we spend so much time making communication boards for every field trip, curricular topic, activity based learning, special class, and nature walk when we could be using core vocabulary words with broad meanings, words based on frequency of use, and words that can be combined limitlessly rather than phrases that are static.

Case in Point:

The Spotsylvania County Schools had approximately 100 nonverbal students with many different types of disabilities and cognitive abilities. There were students with autism, students who were deaf or blind, and students with cerebral palsy. Some students had normal cognitive potential and others had severe cognitive deficits. Some had severe behavior problems; others had difficulty physically manipulating their AAC devices.

SLPs began a program “...to improve the communication and language learning of nonverbal students via the concept of core vocabulary: use of a small set of commonly known words to improve communication and language learning for students who use augmentative and alternative communication (AAC).” (Cannon & Edmond 2009)

At the time the program was put into place, students were able to learn to label and choose: most of their communication materials contained the core word “want” and a list of nouns.

The new program selected an initial set of core words, plus additional words that were to be added incrementally as students mastered each preceding set. This provided the students with a way to increase their language skills in a way they had not previously been able.

The program created 3 different core pages, each representing a different level of language development. Sets of fringe words were also created for school-specific vocabulary words. The communication books presented core words on the left-hand side of a notebook, with content specific words on the right, so students always had access to core vocabulary that remained in the same place. This allowed them to spend less time and energy scanning displays, and helped them to develop motor learning patterns.

Within a couple of years all students had been provided with a core vocabulary based AAC system and the need for creating intent-specific materials decreased significantly.

For AAC users, appropriate use of core vocabulary means faster and more functional communication in all environments. Automatic access to the most frequently used words is important for communicating. These core word groups include verbs, pronouns, articles, prepositions, determiners, adverbs. Very few core words are nouns.

This is very important to remember when we are teaching vocabulary and providing vocabulary for young children with complex communication needs (CCN). Of the few core words that are nouns, almost none have obvious picture associations. And yet, when we teach children with CCN, the first words we teach are nouns. The Picture Exchange Communication System, for example, focuses almost solely on nouns for a very long time; likewise, many of our activity-based boards use almost exclusively object and place words.

We need to remember that there are more reasons to communicate than expressing wants/needs, including:

- greetings & partings (go away),
- request objects & activities (want that, do that, do again, put here, read it),
- request assistance (help me, you help),
- request information (who that, what that, when go, where go),

- request recurrence (more, more that, again, do again),
- existence (that here),
- possession (mine, your, that mine),
- nonexistence (no, none),
- disappearance (gone),
- rejection (don't),
- cessation (stop),
- comment/describe (bad, good),
- direct actions & events (get, give),
- name,
- associate

Using core words gives users an immediate sense of enfranchisement, which is what communication is all about: the AAC user can begin to control what happens to and around him, including the actions of others. Some of the beginning core words are *stop, go, get, more, turn, mine, on, off, up, down, that*. The power of this small number of words lies in the large number of contexts in which they can be used. Simple combinations of these words allow for a significant amount of communication: “get that,” “go up,” “stop that,” “turn that up,” “turn that off,” “go more,” “that mine,” “get that down,” for example.

Additionally, with the focus on learning core words comes a focus on higher level language acquisition. Use of core teaches users to use descriptive language: they tell about things, events, people, and/or places, rather than simply, “what,” and their messages become correspondingly longer.

We must pay more attention to the research on core vocabulary use and on pragmatic intent and social thinking. Without the social thinking concepts of recognizing that “I am having a thought,” a developing AAC user cannot recognize that that thought has a function and the communication of that thought has a specific intent. (Refer to the SocialThinking.com website for more information on Social Thinking, which is beyond the scope of this course.)

How do AAC systems incorporate this research?

Some systems provide developmental stepping stones, providing first single words divided topically or categorically, then moving to an arrangement of core words on a main page that “navigate” to more specific vocabulary that relates.

Other systems start with core vocabulary from the beginning.

Still other systems depend less on core words and more on teaching the pragmatics of communicative intents with a very wide vocabulary base.

Core Vocabulary AAC Systems

As we've already discussed, research has shown that there is a core group of words that we use most frequently.

For most adults, this is a group of 300-500 words that we use in more than 80% of our utterances. Extended, or fringe, vocabulary can be huge, but accounts for relatively little of our communication. Core vocabulary is consistent across environments, activities and persons.

For toddlers, this is a group of 25 words, reported by Benajee, DiCarlo, Striklin (2003), to represent 96.3% of their utterances; in adults, these 25 words represent 45% of our word usage.

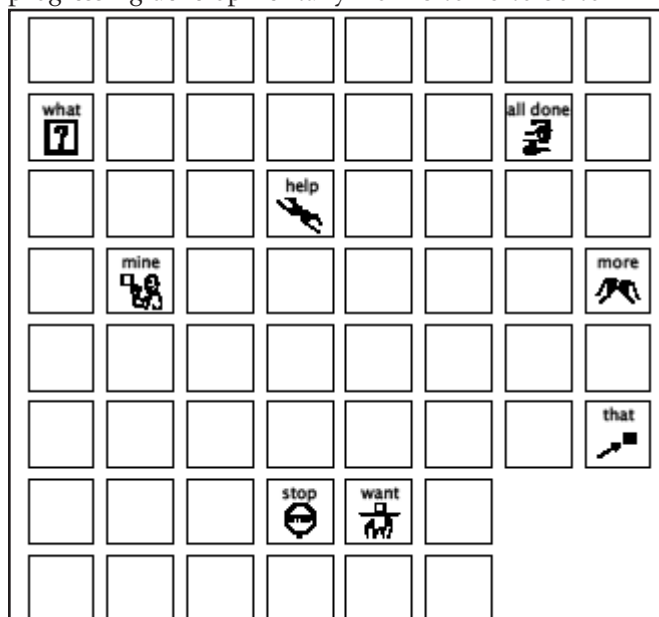
I	no	yes	my	the	want
it	is	that	a	go	mine
you	what	on	in	here	more
out	off	some	help	finished	all done

The first 8 words typically are *what, mine, help, stop, more, that, all done, want*. When engaged in any activity involving genuine interacting, these are the most powerful words a child can have.

And just these first 25 words, when combined, can generate a very powerful list of possible utterances:

what that	want that	some that
more that	that mine	it mine
yes mine	off that	that out
want help	it in	it no in
it off	it on	I go
here I go	here it is	on here
want more	is here	is on
is mine	off mine	

Providing core vocabulary communication boards, progressing developmentally from 8 to 15 to 30 to



8 word core board without color coding

50 words and onwards, provides students with a rich, powerful, re-useable vocabulary that they can use in any context for multiple purposes.

These core vocabulary boards should be color coded, and color coding should be consistent; most often the Fitzgerald key is used, which is consistent with most dynamic display systems:

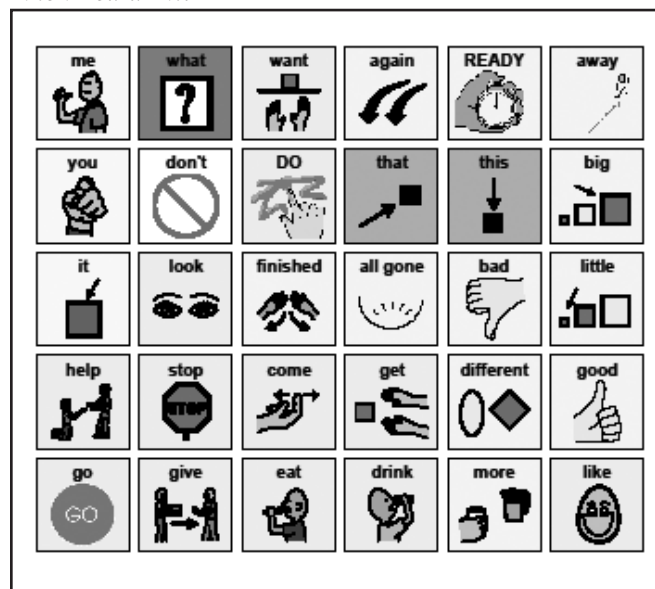
- People/pronouns – he, she YELLOW
- Verbs/action words – go, want GREEN
- Adjectives – big, little DARK BLUE
- Adverbs – slow, fast LIGHT BLUE
- Prepositions – in, out PURPLE
- Determiners – this, that ORANGE
- Interjections – please, thank you PINK
- Nouns – pretzel, mom ORANGE
- Wh words – who, what, where RED
- Conjunctions – and, but, or WHITE

Modified Fitzgerald Key

- Blue: Adjectives
- Green: Verbs
- Yellow: Pronouns
- Orange: Nouns
- White: Conjunctions
- Pink: Prepositions, social words
- Purple: Questions
- Brown: Adverbs
- Red: Important function words, negation, emergency words
- Grey: Determiners

Case in Point:

Commercially available core vocabulary communication boards can be found from several sources, including the Pixon Board Kit.



30 Core Vocabulary Board from the Pixon Kit by Gail van Tatenhove

The Pixon Board Kit began as a collaboration between a small group of SLPs who created a set of symbols that blended the two sets most widely used at the time: Minspeak symbols from the Prentke Romich Co. and PCS from the Mayer-Johnson Co. They then developed a curriculum progression, the first of its kind available for AAC users and their teachers.

The Pixon Kit has sample objectives and teaching modules for the first 150 words. These core words include pronouns, negation, verbs, adjectives, adverbs, conjunctions, prepositions, interrogatives, nouns. The teaching modules teach early emergent language functions and semantic relationships, and then words to expand language functions and relationships. The modules do not need to be taught in linear order

Only words in the top 300 used by typically speaking persons, words used most often in classrooms, and words that can be used to add substance in describing, defining, and providing information were chosen to be used in the Pixon core vocabulary boards.

These core vocabulary boards are paired with fringe – or extended – vocabulary, added as a flip book on the top row as needed. The vocabulary chosen is based on frequency of the use of the word, best practices vocabulary use in classrooms, and use for substance in “descriptive talking.” These books allow for constant access to an unmovable core vocabulary, while allowing page changes to access fringe vocabulary without losing access to core words.

Core vocabulary books are meant to allow communication across a range of activities, and a variety of intents. They are designed to be able to say at least a little in a lot of environments by use of a general set of generative vocabulary. This core set of vocabulary allows a range of messages to be generated in many different contexts.

Core vocabulary systems are based in part on the availability of multiple meanings for many words. For example, “go” might initially be learned as “get in wheelchair/car/van and go somewhere.” But, it also can mean “go” on the potty, “go” start the activity, make it “go” by turning it on, “go” away and leave me alone.

A core vocabulary system should include core vocabulary boards or pages, as well as extended vocabulary (fringe) displays and activity-based displays (the emphasis is on the core vocabulary, but it is acknowledged that everyone requires extended vocabulary suited to their unique needs). In addition to core vocabulary, communication books should include extended vocabulary specific to the individual, such as key people, places and things – for example, student vocabulary includes letters, numbers, days and months. There should also be pages for cues or repairs, so that the user can extend his vocabulary by indicating that he wants a word that is the “same as,” “opposite of,” “starts with,” is in “same group or family as,” or “sounds like.”

The Pixon Kit (described above) has templates for these fringe words so that each book can be individualized, as well as activity based boards (i.e. calendar time, music, cooking, reading), and vocabulary building charts (i.e. for opposites, descriptive concepts, pronouns).

The Core and Intermediate Core Users of the Proloquo2Go AAC app now contain templates for activity based pages that utilize access to core while providing fringe words that are arranged in a stable structure.

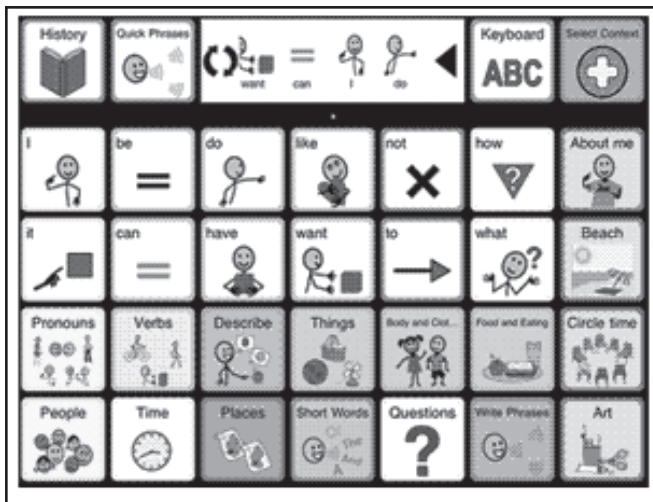
Prentke-Romich devices have always consisted of core vocabularies, with the ability to access at least some fringe without leaving the main page, as well as fringe vocabulary pages for specific topics and the ability to customize.

Dynamic display devices that have Word Power vocabularies utilize the same core vocabulary philosophy. Word Power was designed by Nancy Inman for core vocabulary users.

Other core vocabulary concepts are found in varying degrees and formats in the Gateway software developed by Joan Bruno and found on Dynavox (now Tobii/Dynavox) devices, and on the SonoLexis software found on Tobii/ATI (now Tobii/Dynavox) devices.

Gateway to Language and Learning® is a developmentally-based series of core word page sets designed for children and adults who communicate through the use of augmentative and alternative communication devices. Gateway® was the first core word page set designed for use on a dynamic display device. The core vocabulary set allows for spontaneous and novel message creation. Its organization minimizes the number of key selections needed to create novel messages and reduces the cognitive demands associated with retrieving vocabulary. Access to a thematic set of pages facilitates communication in social, educational, and leisure activities. (<http://www.gatewaytolanguageandlearning.com/>)

Sono Lexis enables users to build their own sentences word for word, as well. It, too, is based around the idea of a frequently used core vocabulary, using a small number of flexible and generic words that make up a large proportion of language. Sono Lexis combines the advantages of motor memory learning through consistent navigation architecture with the approach of semantic color coding. By merging the best of these vocabulary strategies, users need not learn hundreds of abstract icon combinations (such as with Minspeak), nor lose their way with complex navigation through pages.



Sono Lexis page set

As we've seen when using a core vocabulary system, if you teach just one new word – for example, “go,” – the user can now tell you:

- he wants to get up and go somewhere,
- he wants to go on the potty,
- he wants to get in the car and go somewhere,
- he wants you to make it go by turning it on,
- he wants to go do something or start the activity,
- he wants you to go away and leave him alone.

With a core vocabulary system the individual needs only to use the word “go.” The details of the intent are specified by the context, or by any vocabulary that is used after “go,” or by gestures.

Opportunities to learn core words can be easily found in specific activities in which the partner engages with the AAC learner.

In play interactions, the core word you are teaching becomes the focus of many interactions. Having wind-up toys, electronic toys, and toys with wheels provides multiple opportunities to model “go.” Move a car or truck to make it “go.” Hold out a wind-up toy to ask for it to “go.” Turn the winder and watch it “go.” Turn on the DVD or MP3 player to make the music “go.” Hold up the bubble wand and wait to blow until given the word “go.” When the session is all over, it is time to “go.”

“Stop” is a very powerful core word. For individuals with disabilities who often have little or no control over what happens throughout their day, being able to use the word “stop,” can provide them with a way to clearly express a protest without using aggressive or self-injurious or other “inappropriate” behaviors. Partners can block access to a desired item or activity, or do something “annoying” in order to teach the AAC learner to use “stop.” Use “stop” in playing with cars or trains. Use “stop” when watching TV or movies. Use

“stop” every time an activity ends.

“Turn” is another word with multiple meanings and multiple opportunities for teaching. “Turn” can refer to turning around or inside-out, to turning something on or off, up or down. It can also refer to taking a turn in a game. Turn a key in a lock. Watch cars turning on the street while riding in the car.

READING A BOOK:

The learner can indicate “this” or “that” one. “Turn” the book right side up, or “turn” the page. “Go” to begin reading, “stop” or “all done” when the book is finished. “More” to keep reading, “more” or “again” to read it again. Think about using *open, close, read, look, like, that, what.*

GAMES:

During a board game, the interactions focus on “my turn” and “your turn.” Think about how often the words *go, stop, mine, play, get, again,* and *give* can be used.

BUBBLES:

During bubble play there are, again, opportunities for using “turn” in conjunction with “my” and “your.” Core words *blow, again, big, little, more, up, here* can be found in this interaction, as well as verbs “pop” and “catch.” “You do,” and “I do,” are core word phrases.

FOOD:

Meal and snack times are often the first places partners engage with AAC learning, usually because food is often motivating and the vocabulary can be populated by nouns and an “I want...” phrase. However, consider the core words that can be used: *more, again, you, eat, drink, give, have, put it here, I do it, I need help, you help, that, want that, more that, not that, not more, hot, cold, bad, good.* Those are only a few, and none are nouns.

BATH:

Bath time with children can be a great source of language fun. Consider the core word interactions here: *more, here, hot, cold, fun, you do, me do, mine, up, down, there, that* to name a few. Throw in some toys and the core words expand with the choice of fun.

Use of core vocabulary AAC systems allows users to gain better understanding of word meanings, gives them greater diversity of messages in a greater variety of contexts, and allows them to focus on language acquisition rather than access. With the stability of location of vocabulary, and limited need for navigation, users can free up the cognitive energy previously needed to learn discriminations.

Pragmatically Organized Communication Systems

The oldest and best known of the pragmatically organized vocabulary systems is the PODD (Pragmatic Organized Dynamic Display), developed by Porter & Kirkland in Australia. The PODD design was the outcome of their attempts to create multi-level communication books with activity displays to provide aided language stimulation, as outlined by Goossens, et al (1992).

PODDs provide both quick-use vocabulary (i.e. “I need help”) and extensive vocabulary for all types of messages. Efficiency of communication is the most important factor determining the selection, organization, and placement of vocabulary on PODDs.

Vocabulary is organized with thought to both communicative function and typical patterns of conversational discourse. Different types of pragmatic branches and vocabulary organization strategies may be used to support communication for different functions; for example, activity displays are used for predictable activities, while categories are used for less predictable, generative messages. Using the concept of predictably associated vocabulary, PODD communication books also include the vocabulary that is predictably used in association with the main content words in each category/section.

This is very different from the more usual practice of organizing vocabulary by semantic or grammatical category (e.g., people, places, vehicles, animals, verbs, emotions, locative and descriptive words, etc.) in a multi-level communication book, where only the words directly associated with that category are provided. This practice often results in multiple page turns in order to produce a sentence, as the words required are each on different pages, and combining words usually requires multiple page turns back to and forward from the main category index.

The organization of vocabulary in a PODD is designed to support a child’s language learning, and the objective of meeting the varied communication needs of the child as he develops effective communication.

One of the greatest challenges in AAC is providing sufficient vocabulary to not only meet the child’s present communication needs but also to stimulate continued development of skills. While core vocabulary concepts focus on the small number of core words most of us use for the majority of our messages, PODD is a different way of organizing words and symbols in a communication book (or, later, into an SGD) that provides – and insists upon – complete immersion and modeling for learning to use the system (a major focus of the PODD process is training of communication partners, so that partners are modeling use of the system all the time) and also provides vocabulary for consistent communication

all of the time, for a range of messages/intent, for any variety of topics, and in any environment.

The PODD books’ development was guided by three outcomes for AAC users:

- Communicative autonomy (von Tetzchner & Grove, 2003) – that the AAC user should have the fewest restrictions on what they can say, should be responsible for their own language expression, and can express himself with a variety of intents.
- Communication accessibility (von Tetzchner & Grove, 2003) – that the AAC user should have people who understand his AAC system and use, who can assist the AAC user to acquire communication through scaffolding and are willing to communicate in a way that provides the AAC user with maximum autonomy.
- Communication competence (Light, 1989) – that the AAC user should acquire linguistic competence, operational competence, social competence, and strategic competence.

Our brains build understanding based on patterns – working memory can only hold so much information at one time. PODD organization and navigation conventions are designed to reduce the memory load needed to find vocabulary by maximizing patterns.

PODD books provide limited information, and a limited need to remember information, at any given time. The user deals with only the information on one page, then automatically moves to a next page based on their choice of vocabulary on the first page.

PODD navigation strategies include “Go to page #” instructions on many picture buttons that allows independent movement from one page to the next to find specific vocabulary and to move between levels of the book; colored page tabs, matching these numbered instructions, to make finding the needed page easier and faster; and symbols provided for specific operational commands, such as “Go to [category]” or “Go back.”

Additionally, PODD books provide supports for communication repair, which can be essential given the difficulties many individuals who use AAC experience in coordinating body language, gestures, and listening. In books designed for individuals at the early stage of communication and language development, a symbol for OOPS is included on all pages: this allows them to indicate that something is wrong or that a mistake has been made. Though a user may still require partner assistance to identify and fix the problem, using OOPS to indicate that he’s on the wrong page, or wanted a different symbol, or forgot what he was saying, is a valuable repair strategy not included on many AAC systems. Other books include the symbol for I DON’T KNOW on the front page, and often provide additional feedback vocabulary as well,

such as symbols for I DON'T UNDERSTAND, PLEASE EXPLAIN THIS TO ME, and THAT'S NOT WHAT I'M SAYING.

Users recognize the color cues of page numbers, tabs, and buttons; they recognize the standardization of vocabulary type location (i.e. verbs on the left); and they learn to think about the message intent or content in order to find the needed vocabulary needed or the correct pragmatic branch starter.

PODD books use branch starters and categories to direct navigation, so the user can learn to control the intent of the messages: they provide an initial page of quick, functional, high frequency responses or words – for example, messages that can be universally applied to ongoing activities, or cues to reduce problem behaviors, such as “I need a break,” or “I don't want to,” – followed by the pragmatic branch starters that are used to indicate the type of message being delivered.

Pragmatic branch starters perform two different functions within the PODD system.

First, they provide faster predictive links to pages of vocabulary that are commonly required to express a particular communicative function.

Branch starters can include: *I like this, I don't like this, something's wrong, I want something, I want to go [somewhere], I'm asking a ?, I'm telling you something, I have an idea, I'm telling a story, remember when..., do you want to hear a joke?* (The wording can be changed to reflect the personality of the user – individualization of the branch starters is both possible and encouraged.)

These branch starters are how students learn to express different functions. For example: given the one-word “utterance” shop, what is the student trying to say?

- request – Let's go shop (I want to do something)
- question – Are we going to shop? (I'm asking a question)
- relate information – I went to shop... (I'm telling you something)
- tell a story – We went shopping, and (I'm telling a story)
- pretend – Let's play shopping (Let's pretend)

Second, pragmatic branch starters compensate for the reduced use of environmental supports, gestures, and vocal intonations that are usually used by verbal persons to establish the communication intent of 1-2 word utterances. Typically we have difficulty in interpreting the intent of nonverbal students who use 1-2 word or symbol utterances. We tend to interpret messages as requests unless there is some specific signaling of a different intent. The operational commands of the PODD books provide a way to get to vocabulary the user wants, and signal the intent

they want, faster and more specifically. For example, where intonation is generally used to ask a question and gestures can indicate place or referent, the pragmatic branch starter indicates the intent and sets the context for the following words/symbols. There is no equivalent to intonation in symbol communication use. The pragmatic branch starter alone provides the context to the partner that might be used in normal speech by others.

Similar to what we've seen in core systems, with “go”, a user can:

- request: let's go
- question: are we going?
- tell about a personal event: I went
- tell a story: we went, they went
- suggest an activity: let's go play

However, with the pragmatically organized system, “go” is not necessarily the first word used. The message begins with the intent: I am asking a question, I want to go somewhere, I want to do an activity, Something is wrong.

Designed to overcome some of the drawbacks of other book designs, PODD books are intended to enable more “automatic” page/level changes by using a systematic design for locating vocabulary, and increased efficiency in locating needed vocabulary for different messages.

Repeated vocabulary is always in same location on each page. Similar types of vocabulary are on the same page, so that meaningful semantic associations are learned. And, in contrast to the arrangement of standard communication books, which include only directly associated words for the topic on a page, PODD book pages include predictably associated vocabulary in all sections of the communication book. This allows for more consistent language growth and diminished needs to navigate.

While most sections of the PODD have more than one page – vocabulary used to start a sentence is on the first page, more vocabulary is on the second and third pages – there is always a way to access more vocabulary in a given section (turn the page) and a way to “Go back” to the previous page, or the topic entry page, or the beginning of the book. As we've seen, PODD books use numbered pages with instructions built into the system for which page to turn to, color coded tabs, and specific operational commands on each page. This limits both time spent looking at labels or symbols on tabs to find the right page and time spent getting distracted by vocabulary on a “wrong” page, reduces the chance of the partner losing interest while waiting, and limits the demands made on a child's memory when having to navigate through pages.

The topic-specific pages found at the end of the book

are useful for school-based activities in particular: where vocabulary is not usually needed otherwise (i.e. space travel, digestive system), or when there's a limited number of symbols per page, to expand vocabulary for a specific selection. Additionally, in many sections, "list" pages allow the user to add extended vocabulary as needed: for example, the book on an activity page may prompt navigation to a page with reading-based vocabulary (*turn page, read again, read different*), while a "list" page may provide a list of available books or favorite books. (To add vocabulary as needed to support an activity/interaction without having to remake the book, use stickies.)

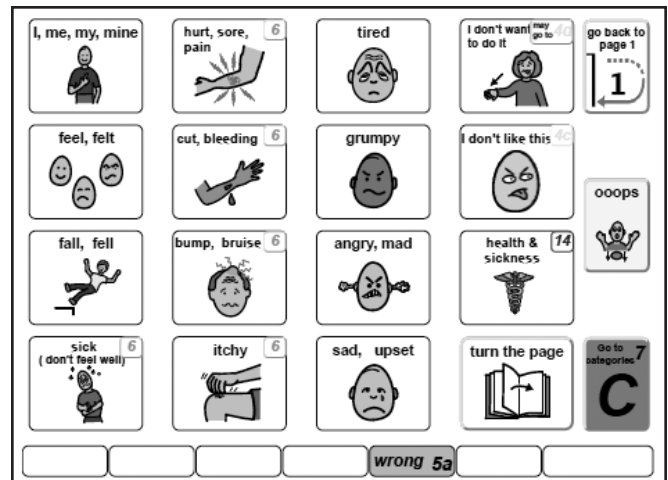
The "Categories" section of the book reflects parts of speech, semantic associations (categories of items), pragmatic function (opinion, question, etc).

There are three types of PODD books: one page opening, two page opening, and two page opening with a side panel. Whereas in a conventional communication book the user needs to turn pages over and over, looking for needed vocabulary, all three types of PODD books provide specific features that improve the efficiency of the word search.

One page opening books show one page of symbols at a time. Again, the "quick words" are on the first page(s), followed by pragmatic branch starters on the next page. Pragmatic branch starters teach students how to find the needed vocabulary for different types of messages. Each pragmatic branch symbol has the "go to" link to tell the user or partner which page to turn to next to find the vocabulary related to that intent.

For example, if the user chooses "Something's wrong," that symbol will tell the user which page to turn to in order to find such vocabulary as "hurt," "sick," "sad," etc. These symbols may then have additional links, such as a page of body parts, symptoms, etc. Some vocabulary may be on more than one page, to reduce number of page turns.

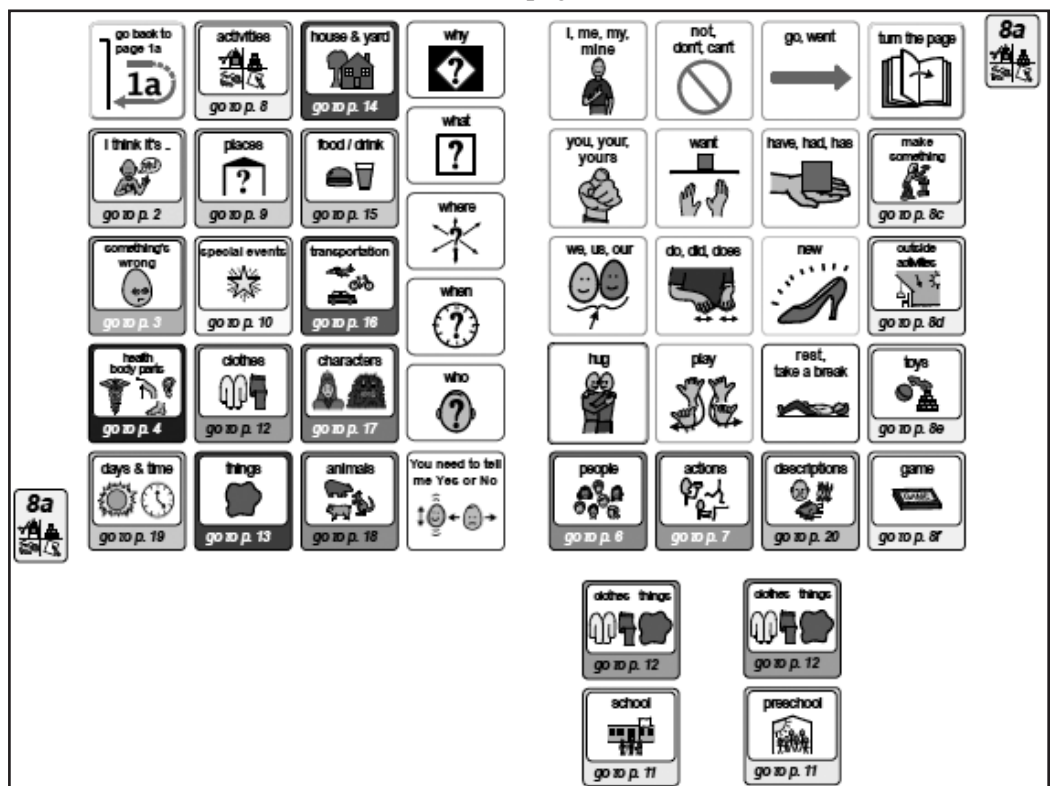
PODD (one page opening) uses single words rather than phrases as much as



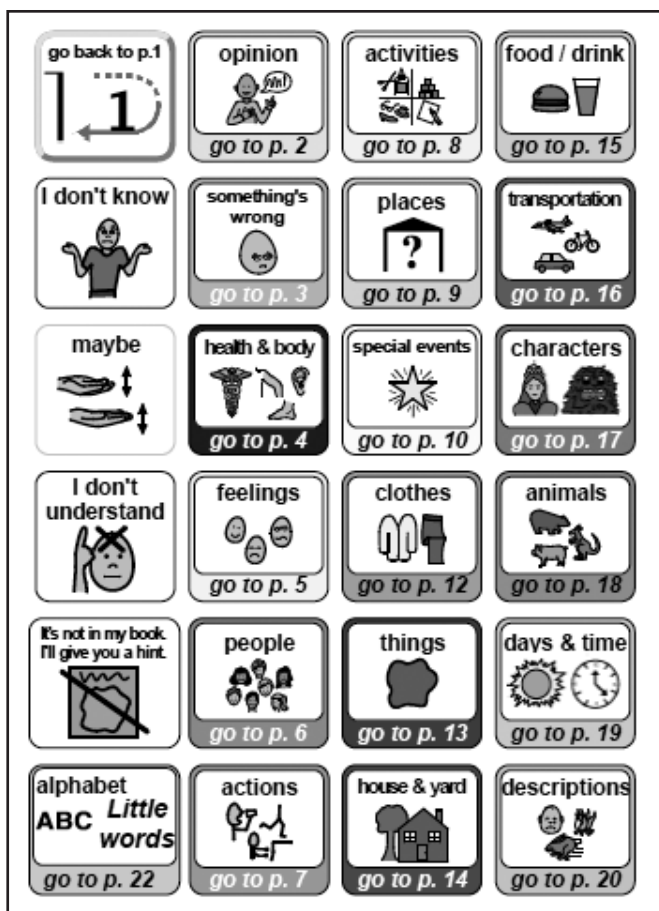
One page opening book

possible, so the student can construct his/her own messages. The emphasis in the one page PODD in particular is on INTENT, not sentence construction. In fact, complete sentence construction is not possible with the one page opening PODD books; their emphasis is on finding the key vocabulary necessary to construct meaning of the messages.

Two page opening books show two pages of symbols at a time, and the symbols on the left side page have consistency for constructing phrases. These are typically for students who don't need the branch starters; they can put together phrases and simple sentences. Predictably related vocabulary is included on each page set.



Two page opening book



Side panel

In two page opening PODD books, users recognize the standardization of location of operational and link buttons and high frequency words.

In *two page opening books with a side panel*, the side panel provides the navigation key.

In addition to their individual applications, PODD books are handy for teachers and SLPs in situations where they have a variety of students with a variety of different AAC systems. The educator or SLP needs a system with which to communicate to ALL the students at the same time – and there is a Group PODD designed for use in group situations.

Also, when the SLP has good understanding of how the system works, PODD pages can be programmed into high tech devices – but when creating a PODD page set on a high tech device, a few differences should be considered. For example, it is not appropriate to merely copy the PODD pages into the speech generating device; the size and shape of a device screen is different from the paper book, necessitating organizational adjustments. The navigation conventions need to be determined before programming the device, to account for decisions a “smart” or human partner might make about when to change pages or change back to the last page. In addition, devices have message windows, which hold the message for speaking, unlike

a paper book that requires the partner to hold onto the message. Unlike a smart partner, however, the device does not remove incorrect pieces of the message without additional movement through the system (such as to a *delete word* button).

PODD page sets are available on the GRID software and the COMPASS app.

A Final Thought: Are There Too Many Symbols?

Oftentimes those working with the AAC user feel that there are too many symbols on a page – that the system is too complex or too hard for them to scan and/or discriminate.

Rather than minimizing the number of symbols on a page and thus either limiting the vocabulary or creating greater need to navigate to find vocabulary, masking – the concept of covering up something – should be used.

In the case of AAC systems, most dynamic display systems now have the ability to “hide” buttons until you are ready to teach the vocabulary to the user.

On high tech devices it is significantly easier to begin with a larger display than is currently needed or desired, and to hide some keys, than to start with smaller displays and need to reprogram as larger displays are needed. This also maintains the stability of vocabulary. None of the current words move when new words are revealed, which can happen when moving to larger grids in some systems. Remember, it is often much easier for a learner to master a larger array size than a complicated system of navigation.

In the case of communication books, paper masks are used, and can be as simple as Post-it notes, or a sheet of paper with windows cut out of it. This allows the caregiver, SLP, or teacher to focus on target words, and reveal new vocabulary as the user is ready for it.

True, PODD books in particular are big. There is a lot of vocabulary in them, and many more pages than are typically seen in a communication book. But we need to get away from what Porter and Goossens call the Catch 22 of aided language acquisition:

- aided language doesn't exist naturally in the environment
- the child cannot spontaneously acquire something that doesn't exist
- we provide intervention based on what we think is possible
- the child can only acquire what we have set up for them to acquire

Because we tend to see what we expect to see, and provide only what we think might be possible, we

frequently deny the child the opportunity to learn beyond that. We need to start providing as much language as is possible to acquire, and providing the models to use it.

Conclusion

While both core and pragmatic systems provide vocabulary for communicating messages beyond requesting, how organization and use of the system is taught is a little different for each.

No matter which system you choose, while you teach “ride,” and “go,” and “watch,” individually in the context in which they happen, you need to teach the AAC user that these words are all about doing something, and that the “doing something” words are all in (X) location in the AAC system. Exactly where that location is will depend upon the organizational system that has been chosen for that user.

And the process of learning how to access the words in the system can be very different. Learners are better able to take advantage of access through motor planning using a core word system. Learners of PODD learn consistent navigation patterns that allow for learning through somewhat different patterns.

However, both types of systems provide organized and functional vocabulary. Both offer stability of vocabulary for ease of learning. Both stress the need for using aided language stimulation to model use of the system and its vocabulary and to provide models of using pictures or written words to communicate. And both stress the importance of teaching more functional vocabulary.

It should be clear that how we organize vocabulary for an AAC user in his AAC system is an important decision. No matter which organizational system is chosen, it is important that the system be sufficiently robust to meet all of the user’s communication needs, and that the organization be consistently applied to the various components he uses.

Building Connections: How does this course material impact the practice of Occupational Therapy?

The ability to communicate enhances the individual’s ability to participate in occupations of all kinds. Thus, you may find yourself working closely with SLPs: interventions that allow individuals to communicate effectively are key components of interventions that allow them to participate across multiple performance areas.

This course was designed to provide insight into the issues SLPs address as they select and organize the vocabulary used in AAC devices.

OTs can provide input, and have substantial impact on outcomes, throughout this process.

With that thought in mind, you are challenged with the following reflective questions:

- Per the course material, “Access to the words with which to communicate is important, and navigation is key to that access.”

What input can you provide that will help build an AAC system that your client is able to navigate? (Hint: what are your client’s performance strengths and deficits? How might they impact the selection process?)

What strategies can you use to improve each client’s ability to navigate the AAC system? (Hint: can your intervention plan address the sensorimotor and cognitive challenges posed by a specific system?)

- Per the course material, “...Many see the function of the AAC vocabulary as providing a small set of consistent and predictable words that occur often and comprise 80% of spoken messages. Core words provide the basic structure of our messages, where fringe words provide individualized details.”

Which of your clients’ performance areas may require more specialized, “fringe,” vocabulary? How often, and/or how quickly, will they need to access this vocabulary?

- Are you currently collaborating with SLPs to provide services to any of your clients? Do you anticipate that your interactions and/or practices will change as a result of this course?

Space is provided on the next page for you to answer. (These answers need not be submitted - they are for your personal use.)

REFERENCES:

- Baker, B., Hill, K., Devylder, R. (2000). Core Vocabulary is the Same Across Environments, California State University at Northridge (CSUN) Conference, Los Angeles, California.
- Balandin, S., Iacono, T. (1999). Adult Vocabulary Usage, English, Sydney, Australia, AAC, Vol. 14.
- Banajee, Meher, Cynthia Dicarolo, and Sarintha Buras Stricklin. "Core Vocabulary Determination for Toddlers." *Augmentative and Alternative Communication* 19.2 (2003): 67-73. Web.
- Banajee, M., Dicarolo, C., & Stricklin, S.B. (2003). Core Vocabulary Determination for toddlers. *Augmentative and Alternative Communication (AAC)*, 19, 67-73.
- Berkowitz, S. Linguistic Skills of the Developmentally Disabled: What Are We Teaching?: ASHA Convention (November) 1988: Boston, Ma.
- Cannon, B. & Edmond, G. A Few Good Words: Using Core Vocabulary to Support Non-verbal Students. *The ASHA Leader*. April 2009
- Goossens, C., Crain, S., & Elder, P. (1994). Engineering the preschool environment for interactive symbolic communication (Revised). Birmingham, AL: Southeast Augmentative Communication Conference Publications Clinician Serie
- Light, J. (1989). Towards a definition of communicative competence for individuals using augmentative and alternative communication systems. *Augmentative and Alternative Communication*, 5, 137-144
- Parker, Robyn. "Organizing Vocabulary for an AAC System." Kent ISD Assistive Technology /. N.p., n.d. Web. 29 Apr. 2015.
- Porter, G & Kirkland, J (1995) AAC in CE integrating Augmentative and Alternative Communication into group programs: Utilising the principles of Conductive Education. Scope
- Romich, B.A., Vanderheiden, G.C., & Hill, K.J. (2000). Augmentative Communication in The Biomedical Engineering Handbook second edition. Bronzino, J.D., editor. pp. 144-1 through 8. CRC Press. Boca Raton, FL.
- von Tetzchner, S., Grove, N., editors. (eds.). (2003). *Augmentative and Alternative Communication. Developmental Issues*. London: Whurr/Wiley
- Banajee, M., DiCarlo, C., Stricklin, S.B., (2003). *Core vocabulary determination for toddlers. Augmentative and Alternative Communication*, 19, 67-73.
- Binger, C. & Light, J. (2007). *The effect of aided aac modeling on the expression of multisymbol messages by preschoolers who use aac*. *Augmentative and Alternative Communication*, 23(1), 30-43
- Browder, D., Mims, P.; (2008). *Outcomes for Literacy for Students with Significant Cognitive Disabilities*, UNC-Charlotte
- Browder, D., et al; Early Literacy Skills Builder. Attainment Co.
- Burkhart, L., Costello, J. (2008). *CVI and complex communication needs: Characteristics and aac strategies*. CSUN. Los Angeles
- Burkhart, L., Porter, G. (2006). *Partner assisted communication strategies for children who face multiple challenges*. ISAAC.
- Caffiero, J., (2004). *AAC supports for engaging students with autism spectrum disorders in group instruction*. Closing the Gap.
- Durand, V.M., (1999). *Functional Communication Using Assistive Devices*; *Journal of Applied Behavior Analysis*, 3 (3),247-267.
- Finch, A. & Scherz, J. *Tips for Developing Literacy for Users of AAC*; *Perspectives on AAC*. 17 (2): 78 ASHA
- Flippin, M., Reszka, S., & Watson, L. (2010). *Effectiveness of PECS on Communication & Speech for Children with Autism Spectrum Disorder*; *American Journal of Speech-Language Pathology* (February)
- Goossens, Crain & Elder (1992). *Engineering the preschool environment for interactive, symbolic communication*. Southeast Augmentative Communication Conference Publications, as well as Mayer-Johnson Co.
- Justice, L., et al (2010). *Print Focused Read Alouds in Preschool Classrooms*; LSHSS (April)
- Kent-Walsh, J. & Binger, C. (2009) *Addressing the communication demands of the classroom for beginning communicators and early language users. Practically Speaking: Language, Literacy, and Academic Development for Students with AAC Needs*. Brookes Publishing.
- Light, J. & McNaughton, D. (2007) *Evidence-Based Literacy Intervention for Individuals Who Require AAC*. ASHA. Boston
- Musselwhite, C.R., Erickson, K., Zoilkowski, R. (2002). *The Beginning Literacy Frame-work*. Don Johnston Inc.
- Musselwhite, C.R. (2006). *R.A.P.S. Writing Tips!* Learning Magic Inc.
- Porter, G, & Caffiero, J. (2010). *PODD Communication*

ADDITIONAL REFERENCES & RESOURCES:

- American Speech-Language-Hearing Assoc (2001a). *Competencies for speech-language pathologists providing services in augmentative communication*. *Asha*, 31(3), 107-110.

Books: A Promising Practice for Individuals with Autism Spectrum Disorders. Perspectives on AAC; ASHA.

Roman-Lantzy, C. (2007). *Cortical Visual Impairment: An Approach to Assessment and Intervention.* American Foundation for the Blind Press.

Sennett, S. & Bowker, A. (2010). *Autism, AAC, and Proloquo2Go.* Perspectives on AAC. ASHA.

Smith, M. (2009). *Vocabulary Instruction and Aided Communication.* AAC by the Bay Conference. San Francisco

Soto, G. & Zangari, C. (2009). *Practically Speaking: Language, Literacy, and Academic Development for Students with AAC Needs.* Brookes Publishing.

INTERNET RESOURCES:

www.aac institute.org
Core vocabulary information

www.aac intervention.com
Lots of information about AAC from where to start with literature-based boards to tips and tricks. Musselwhite, C.

www.adaptivationinc.com
Catalogue of devices, switches, and more

www.aren.scps.k12.fl.us/training/Flyers/ECT%20Intro.pdf Environmental Control Teaching manual

www.asha.org/docs
ASHA's site contains position documents, and documents outlining their stand on the knowledge and skills, roles and responsibilities of SLPs regarding AAC

<http://autismpdc.fpg.unc.edu>
Lists all evidence based practices for autism spectrum disorder, including overview, intervention steps, and check sheets

www.bcps.k12.md.us/boardmaker/adapted_library.asp
Hundreds of books adapted with PCS-based communication boards. Each book has different levels of boards (usually 9 & 20 location grids). Can be used as communication boards or cut up for use in adapting books

<http://boston.k12.ma.us/technology/emmanuel/ModifyingBooks.pdf>
Pages of book ideas

www.candlelightstories.com
Some ebooks are free; full access costs about \$10

<http://coefaculty.valdosta.edu/spe/ATRB/video>
2 minute video on ways to adapt books

www.creativecommunicating.com
Patti King-Debaun's website offers materials for teaching literacy to AAC users

http://depts.washington.edu/enables/myths_aac_inter_infants.htm

Website has good training information

www.enchantedlearning.com/Rhymes.html
\$20 membership required for full site, but symbol-adapted nursery rhymes are free

www.lindaburkhart.com
Offers a multitude of free handouts on intervention in AAC with students with complex communication needs, cortical vision impairment, Rett syndrome, PDD communication books, and more, as well as how-to handouts for building switches and mounts

www.dynavotech.com
Look for Intervention Toolkit for handouts, therapy ideas, and directions for activities

<http://www.novita.org.au/Content.aspx?p=683>

www.paulakluth.com/articles
Ideas for adapting books, including students in general ed classrooms

www.pdictionary.com/
Internet picture dictionary provides symbols with English and Spanish words for use in adapted books or communication displays

http://prekese.dadeschools.net/resourcepages/resources_teacher_resource_room_maint.htm
Resources for children's books, single-message output, bilingual resources, overlay creating

www.prentrom.com
Look for AAC Language Lab for step-by-step intervention targets, IEP objectives, and plans. This is also the source for the Pixon Project Kit by G. Van Tatenhove

www.storyplace.org
Charlotte & Mecklenburg County public library has preschool stories with text, dialogue is highlighted, accompanying games

<http://trainland.tripod.com/pecs.htm>
Links to many Boardmaker overlays

<http://aac.unl.edu/csl/pre.html>
Literacy, aac information

<http://www.usu.edu/teachall/text/reading/Frylist.pdf>
Fry's instant sight word list – all 300

www.vantatenhove.com
Gail has many handouts here on using core vocabulary, descriptive teaching, teaching Unity/Minspeak, and samples of the Pixon boards

Organized Vocabulary: Augmentative-Alternative Communication Final Exam (1.5 CE Hours)

1. ASHA's website lists six points supporting the need for SNUG in AAC systems, including: _____.
 - a. The vast majority of the sentences we use in our daily communication are repeated
 - b. Statements by people who rely on AAC clearly indicate that *they do not find pre-stored sentences useful* for most of what they want to say.
 - c. In an Australian research project, Sue Balandin and Teresa Iacono asked speech-language pathologists to *predict the topics* that would be useful to employees in a sheltered workshop during breaks. The success rate was 25-30%.
 - d. In *normal language development*, young children begin to speak using full sentences
2. Access to the words with which to communicate is important, and _____ is key to that access.
 - a. Navigation
 - b. The effective use of pre-stored sentences
 - c. The spontaneous use of quick whole messages
 - d. Change
3. _____ depend upon the AAC user being literate.
 - a. Standardized symbol sets
 - b. Single meaning pictures
 - c. Semantic compaction symbols
 - d. Alphabetic systems
4. Learning through motor patterns has been identified as _____ with most AAC users.
 - a. Optional
 - b. Irrelevant
 - c. Permissible
 - d. Important
5. Categorical and activity-based systems, where vocabulary is organized into pages by category or topic, _____.
 - a. Are no longer widely in use
 - b. Can work when the interaction is very predictable
 - c. Are helpful when the user is trying to share his own thoughts and ideas
 - d. Allow users to swiftly move beyond labeling and requesting
6. Research tells us that there are two types of vocabulary: core and fringe. Core vocabulary _____.
 - a. Contains largely nouns
 - b. Is less applicable and may be used only in some contexts
 - c. Is comprised of high frequency words that are multi-purpose and versatile, and is independent of cognitive ability
 - d. Contains a very large number of words with limited applicability
7. Some of the beginning core words are: _____.
 - a. Stop, more, mine, that
 - b. Mom, Dad, baby, cat, dog
 - c. Apple, banana, pear, orange
 - d. Please, thank you, excuse me
8. Research has shown that there is a core group of words that we use most frequently. For toddlers, this is a group of 25 words, reported by Benajee, DiCarlo, Striklin (2003), to represent _____ of their utterances
 - a. 45%
 - b. 72.8%
 - c. 87%
 - d. 96.3%
9. In the Modified Fitzgerald Key, _____.
 - a. White = conjunctions
 - b. Purple = nouns
 - c. Blue = adverbs
 - d. Pink = verbs
10. A core vocabulary system should include core vocabulary boards or pages, as well as _____.
 - a. Extended vocabulary (fringe) displays and activity-based displays
 - b. Pages for cues or repairs
 - c. Both a. and b.
 - d. Neither a. nor b.

11. _____ is the most important factor determining the selection, organization, and placement of vocabulary on PODDs.
 - a. Semantic category
 - b. Efficiency of communication
 - c. Communicative function
 - d. Typical patterns of conversational discourse

12. PODD organization and navigation conventions are designed to reduce the memory load needed to find vocabulary by maximizing _____.
 - a. Patterns
 - b. Movement
 - c. Information
 - d. Understanding

13. In contrast to the arrangement of standard communication books, which include only directly associated words for the topic on a page, PODD book pages include _____ in all sections of the communication book.
 - a. Topic-specific pages
 - b. Core and fringe vocabulary
 - c. Grammatical categories
 - d. Predictably associated vocabulary

14. When creating a PODD page set on a high tech device, a few differences should be considered. For example: _____.
 - a. The size and shape of a device screen is different from the paper book, necessitating organizational adjustments
 - b. There is a Group PODD designed for use in group situations
 - c. The device needs to be programmed before the navigation conventions can be determined
 - d. The device removes incorrect pieces of the message without additional movement through the system

15. Rather than minimizing the number of symbols on a page and thus either limiting the vocabulary or creating greater need to navigate to find vocabulary, _____ should be used.
 - a. Intervention
 - b. Scanning
 - c. Masking
 - d. Reprogramming

ANSWER SHEET

First Name: _____ Last Name: _____ Date: _____

Address: _____ City: _____

State: _____ ZIP: _____ Country: _____

Phone: _____ Email: _____

NCBOT/ASHA #: _____

Other: License/certification # and issuing state/organization _____

Clinical Fellow: Supervisor name and NCBOT/ASHA account # _____

Graduate Student: University name and expected graduation date _____

** See instructions on the cover page to submit your exams and pay for your course.

By submitting this final exam for grading, I hereby certify that I have spent the required time to study this course material and that I have personally completed each module/session of instruction.

Organized Vocabulary: Augmentative-Alternative Communication Final Exam

- | | | | | |
|--------------------|--------------------|--------------------|---------------------|---------------------|
| 1. (A) (B) (C) (D) | 4. (A) (B) (C) (D) | 7. (A) (B) (C) (D) | 10. (A) (B) (C) (D) | 13. (A) (B) (C) (D) |
| 2. (A) (B) (C) (D) | 5. (A) (B) (C) (D) | 8. (A) (B) (C) (D) | 11. (A) (B) (C) (D) | 14. (A) (B) (C) (D) |
| 3. (A) (B) (C) (D) | 6. (A) (B) (C) (D) | 9. (A) (B) (C) (D) | 12. (A) (B) (C) (D) | 15. (A) (B) (C) (D) |

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ORGANIZED VOCABULARY: AUGMENTATIVE-ALTERNATIVE COMMUNICATION

(1.5 CE HOURS)

COURSE EVALUATION

Learner Name: _____ Completion Date: _____

PT PTA OT OTA SLP SLPA Other: _____

	Disagree			Agree		
Orientation was thorough and clear	1	2	3	4	5	
Instructional personnel disclosures were readily available and clearly stated	1	2	3	4	5	
Learning objectives were clearly stated	1	2	3	4	5	
Completion requirements were clearly stated	1	2	3	4	5	
Content was well-organized	1	2	3	4	5	
Content was informative	1	2	3	4	5	
Content's cross-disciplinary relevance was evident	1	2	3	4	5	
Content reflected stated learning objectives	1	2	3	4	5	
Exam assessed stated learning objectives	1	2	3	4	5	
Exam was graded promptly	1	2	3	4	5	
Satisfied with learning experience	1	2	3	4	5	
Satisfied with customer service (if applicable)	1	2	3	4	5	n/a

What suggestions do you have to improve this program, if any?

What educational needs do you currently have?

What other courses or topics are of interest to you?
