Gateway
To Language and Learning

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Gateway$^{©}$ Vocabulary Manual

What is Gateway©?

Gateway© is a series of page sets designed to promote language development for early communicators and offer competent communicators an efficient and effective tool to meet all of their communication needs. The Gateway Vocabulary page sets have been tailored for use with the TouchChat AAC App. Gateway provides consistency within its organizational design so a user can seamlessly transition from one page set to the next level of complexity while maintaining his/her achieved level of communicative competence.

The Gateway© Vocabulary for the TouchChat has eleven (11) page sets. Four page sets are designed to meet the needs of young children (i.e., Gateway 12-Child, Gateway 20–Child, Gateway 40–Child, and Gateway 66-Child), and seven are designed to meet the needs of teens and/or adults (i.e., Gateway 20-Teen, Gateway 30-Teen, Gateway 40-Teen, Text 40, and Gateway 66-Teen/Adult, Text 66, and Pro_TC). Each page set includes a "core" word vocabulary to enable the user generate novel messages combined with a set of activity and/or message-based pages, to promote efficient communication within educational, recreational activities or social settings.

Gateway 12-Child

Gateway 12-Child targets young children who are developmentally ready to create multi-word messages. Gateway 12-Child helps emerging communicators develop language by using their AAC devices in play activities. The targeted user can successfully access a 12-location array and is developmentally ready to learn to communicate in a play environment. Symbols represent nouns, verbs, adjectives and adverbs. Gateway 12 includes topical page sets for Basic Needs, Playing House, Cooking, Art Activity, Nursery Rhymes, Morning Circle routines, Simon Say's Actions and Body parts, Birthday Party, and Spot the Dog book to promote literacy. Page set can be used independently or during a focused activity mediated by an adult communication partner.

Gateway 20-Child

Gateway 20-Child targets preschool and school-aged children who communicate using 1-2 word messages and have the potential to improve their expressive language performance. Candidates for this page set can recognize symbols of nouns, verbs and some adjectives/adverbs. These children have the potential to improve their expressive language abilities. It is a transitional step from Gateway 12-Child to Gateway 20-Child.

Gateway 20-Child includes over 800 words along with features that help children form multi-word sentences. *Sentence*

Development Links provide a simplified approach to facilitate sentence formation. Selecting a verb automatically opens a page of associated "Things" that the child can use to complete a message. "Describe" and "Color/Shapes" folders provide a means for a child to expand his/her sentence complexity. The present progressive verb form, '-ing", is modeled on the verb page to promote spontaneous usage when communicating in later page sets. *Semantic Power Strips,* sets of paradigmatically associated words, provide a focused array of words that offer greater diversity of expression. A "My Themes" folder, located on the Main Page, links the child to five *Thematic folders – About Me, Time to Chat, Time to Learn, Time to Play,* and *Time in Town.* Each folder contains a variety of activity sets designed to increase a child's opportunities to improve social interaction and to facilitate participation in educational and recreational activities.

Gateway 40-Child

Gateway 40-Child targets towards school-aged children who have learned to sequence 2-3 symbols to form telegraphic messages. These children have the potential to learn to use word endings, articles and prepositions and to create more elaborate sentences. Gateway 40-Child is a logical next step for children using Gateway 20-Child who now require a more complex vocabulary and/or who have made significant gains in expressive language performance.

The powerful Gateway 40-Child MAIN page has a core of the most frequently used words of our language available through a single key selection. Combined core and fringe vocabulary total well over 2000 words. A *School Core* page enables users to access topical school vocabulary without loosing access to Gateway's core. Key features of Gateway 40-Child include the use of *Semantic Power Strips*, sets of paradigmatically associated words; *Sentence Development Links that* facilitate rapid sentence generation and *Dynamic Morphology*, where targeted word endings are appropriately presented minimizing keystroke selections. Spelling and literacy are among the educational goals and/or abilities targeted by users of this page set. Eight Tabs– *About Me, About You, Questions & Comments, Manners, Silly Things, Time to Learn, Time to Play,* and *Time in Town* - increase a user's opportunity to use their AAC system for participating in educational, literacy and leisure activities.

Gateway 66-Child

Gateway 66-Child targets school-aged children benefiting from an efficient and powerful core word vocabulary. Potential users demonstrate strong receptive and expressive language abilities and may be constructing 5-6 word sentences using articles, prepositions, and pronouns. Users are either using or learning to use the full range of word morphology features. Gateway 66-Child is a logical next step for

children using Gateway 40-Child who now require a more complex vocabulary and/or who have made significant gains in expressive language performance.

Its powerful MAIN page has a core of the most frequently used words of our language available through a single key selection.   The design of this page set results in an average of 1.3 keystrokes per word. Key features of Gateway 66-Child include Gateway's *Dynamic Morphology* feature and *Semantic Power Strips.* Access to a spelling page with word prediction is provided. Educational pages are designed to support mastery of core-curriculum competences, thus users of Gateway 66- Child can readily compete with peers in a regular educational environment. A *School & Community Core* page enables users to access school vocabulary without losing access to Gateway's powerful core vocabulary. A "My Themes" folder, links the user to a set of six *thematic folders – About Me, Time to Chat, Time to Learn, Time to Relax, Time in Town* and *Manners.* Each folder contains a variety of words, messages and/or activity sets designed to increase a user's opportunities for enhancing social communication and in educational, recreational and community-based activities.

Gateway 20-Teen

Gateway 20-Teen targets teens and young adults with limited expressive abilities who can benefit from a 20-location grid. Users of Gateway 20-Teen can recognize symbols of nouns, verbs, adjectives and adverbs. Some users who could benefit from a more functionally based vocabulary can seamlessly transition to Gateway 20-Teen from Gateway 20-Child**.**

Core and fringe vocabulary was selected to meet the needs and interests of teens and young adults. Gateway 20-Teen includes over 800 words along with features that help users form multi-word messages. *Sentence Development Links* provide a simplified approach to facilitate sentence formation. Selecting a verb links to a page of associated "Things" that can complete the message. The *Describe" and "Color/Shapes* folders provide a means to expand sentence complexity. *Semantic Power Strips*, sets of paradigmatically associated words, provide a focused array of words that offer greater diversity of expression. A set of five *Tabs* is available – *About Me, Time to Chat, Time to Learn, Time to relax, Time in Town* – to increase opportunities for participating in social situations, as well as in educational and leisure activities.
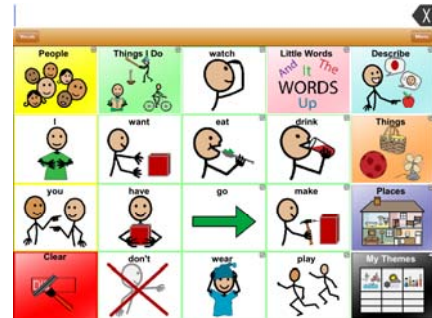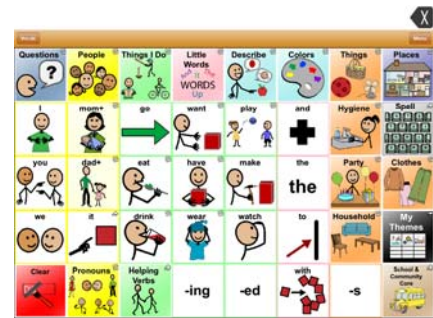
Gateway 30-Teen

Gateway 30-Teen is designed for teens and young adults who demonstrate limitations in their cognitive-language performance. Candidates communicate using single or multiple word utterances and typically do not use function words (e.g. the, with) or word endings such as "-ing or "ed" as a part of their spontaneous message generation. While they may combine words to form telegraphic messages, word order may not reflect mature syntax.

The core word vocabulary of the Gateway 30-Teen set is functionally based reflecting many activities of daily living. Gateway 30-Teen includes over 1500 words along with features such as *Sentence Development Links that* provide a simplified approach to facilitating sentence formation. *Semantic Power Strips*, sets of paradigmatically associated words, provide a focused array of vocabulary to broaden the options available to the user. Gateway 30-Teen includes simple object categories such as *Foods, Household, Hygiene, Clothing*, along with folders for *Community Places and Things, News, Events* and *School Places and Things*. A Themes Folder links the user to six *Tabs*. The *About Me* offers general information about the user. The *About You* and *Comments & Questions* Tabs enables the user to express a range of pragmatic functions. *Time to Learn Tab* enables the user to talk about what occurs during the different months of the year as well as providing open pages for adding educational vocabulary if needed. The *Time to Relax* Tab provides several pages that can be used to participate in leisure activities such as Bingo or cards. *Talk in Town* provides several thematic pages that can be used for communicating within the community.

Gateway 40-Teen

Gateway 40-Teen targets teens and young adults who have good receptive and expressive language abilities but benefit from a reduced symbol set. Its powerful MAIN page has a core of the most frequently used words of our language available through a single key selection. Combined core and fringe vocabulary total well over 2000 words. Selected vocabulary addresses needs and interests of teens and young adults. A *School & Community Core* page enables users to access topical school vocabulary without losing access to Gateway's core. Use of the full complement of Gateway's *Dynamic Morphology* results in keystroke savings enhancing the efficiency of Gateway 40-Teen. Generating a sentence takes an average of 1.5 keystrokes per word. *Semantic Power Strips*, and *Sentence Development Links* that facilitate rapid sentence generation are provided**.** A set of *Tabs* is available – *About me, Time to Chat, Questions, Comments, Manners, Silly Things, Time to Learn, Time to Relax, Time to Relax* and *Time in Town* - increasing a user's opportunity to use their AAC system for participating in social situations, well as in educational and leisure activities.

Gateway 40 - Text

Gateway 40 Text is an exact duplicate of the 40-Teen page set, however all of the symbols have been removed to accommodate individuals who prefer to have a text-based page set. Thus, Text 40 meets the needs of teens and young adults who have good receptive and expressive language abilities but benefit from a reduced symbol set.

Gateway 66-Teen

Gateway 66-Teen targets teen and adult users who require an efficient core word vocabulary. It effectively meets the needs of competent communicators as well as those working to gain linguistic competence. Its powerful MAIN page has a core of the most frequently used words of the English language available through a single key selection. A *School & Community Core* page enables users to access topical school and community-based vocabulary without navigating from Gateway's core. It utilizes Gateway's *Dynamic Morphology* feature to minimize keystrokes. The design of the Gateway 66-Teen page set results in an average of 1.3 keystrokes per word. *Semantic Power Strips* provide expanded vocabulary selection without navigating from the MAIN page. Access to a spelling page with word prediction is provided. A *My Themes* folder, links the user to a set of six thematic folders – *About Me, Time to Chat, Time to Learn, Time to Relax, Time in Town and Manners*. Each folder is designed to increase opportunities for participating in social situations, well as in educational and leisure activities.

Gateway 66- Text

Gateway 66 Text is an exact duplicate of the 66-Teen page set, however all of the symbols have been removed to accommodate individuals who prefer to have a text-based page set. Thus, Text 40 meets the needs of teens and adults who have good receptive and expressive language abilities but benefit from a reduced symbol set.

Gateway© Pro_TC

Gateway Pro_TC is a logical next step for children using Gateway Child 66 who now require a more complex vocabulary and continues to need access to a large core word vocabulary and to open locations to address their academic needs. Pro also targets teen and adult users who require an efficient core word vocabulary with fringe vocabulary related to independent care needs and community activities. Pro effectively meets the needs of competent communicators. Gateway Pro_TC, above, is targeted for users with good to excellent fine motor skills. A Phrases button, provides sentence starters and auto-closes when appropriate. Gateway's *Dynamic Morphology* (i.e., word endings are automatically added to verbs without requiring additional key selections) features to minimize keystrokes. *Semantic Power Strips,* sets of paradigmatically associated words, provide expanded vocabulary selection without navigating from the MAIN page. The design of theses page sets results in an average of 1.03 keystrokes per word across

conversation. A Topics button links the user to a set of topic pages that can enhance efficient communication within community activities.

Why Gateway"
- Simple to Learn
- Developmental Model for Language Acquisition
- Efficient Organization results in minimal keystrokes per word

Simple to Learn

Gateway is easy to learn. The cognitive demands associated with learning symbol meanings are minimized by the use of single-meaning icons and/or written words to represent vocabulary. For nouns and many other word classes, the selected symbols provide a transparent or intuitive means of representing vocabulary. Text is used to represent many function words. This helps to reduce the need for learning arbitrary symbols to represent the words of our language that cannot be easily be represented by an iconic symbol. Symbols for verbs, adjectives and adverbs are less transparent and may require instruction to be understood by an individual who either is young or demonstrates perceptual and/or cognitive limitations.

Young children tend to separate pictures according to categories. That is, children can easily sort pictures into categories of people, colors, foods, places, and so on. The organization of Gateway reflects this developmental ability and uses a modified Fitzgerald Key Format to represent vocabulary.

Developmental Model for Language Acquisition

Gateway© meets the needs with individuals demonstrating a wide range of expressive language abilities. Many of these individuals require intervention directed towards improving their expressive communication performance. It is important that individuals who provide this intervention understand how they can use the language features designed as a part of the Gateway Vocabulary to enable children who use AAC to expand their expressive language performance.

In teaching a severely speech impaired child to communicate using the Gateway Vocabulary, the course of a child's expressive language acquisition can mirror the normal language development sequence. A child can begin communicating using single words. By learning to combine symbols across pages, they can begin to form telegraphic messages. Once a child understands verb tenses, use of plurals and other morphologic endings, the child can learn to use these features to create syntactically correct sentences. Using the vocabulary and word morphology keys embedded systematically within the Gateway Vocabulary, a child can learn to recode our language to achieve the same level of language competence as speaking peers.

Efficient Communication

Gateway has been organized to provide maximum efficiency for the user. An efficiently designed communication system enables a user to converse with a minimum amount of effort. Gateway was designed to achieve an average 1.5 selections per word for *core* vocabulary words.   Words considered fringe, or less frequently used vocabulary, may require two or more key selections. The number of

words presented per page effects efficiency. Therefore, when creating a sentence with Gateway 20 or 30 the average number of selections is higher than in page sets where there are 40 or 66 words on a page.

The following table presents sample sentences created using the single word vocabulary of the Gateway 40-Child, and Gateway 66-Child vocabulary sets. These sentences were generated by some of the individuals who use Gateway and demonstrate the power of the App. Since many of the users of Gateway 20 typically generate telegraphic sentences, Gateway 20 is not included in the following comparison.

Sentence	# of Wds	# of Key Selections	
		Gateway 40-Child	Gateway 66-Teen
I want to go outside.	5	5	5
I don't want to go to school.	7	9	8
Can you help me?	4	7	6
Will you read to me?	5	8	6
I am going to play baseball.	6	6	8
I forgot to do my homework.	6	13	11
I love to eat ice cream.	6	7	6
What are you going to eat?	6	8	7
Do you have it when you go to school?	9	13	12
Yesterday I went swimming.	4	8	8
Total Number of Words	**58**	**84**	**77**
Avg. Number of Keystrokes		**1.44**	**1.32**

These sample sentences contain 58 words. Using the single word vocabulary of Gateway 66-Child for example, a user would need to make total of 77 key selections to generate these sentences. The average number of keystrokes (ANK) to "speak" these sentences is 1.3. This is substantially lower than the targeted goal of a 1.4 key selections per word. The ANK for Gateway 40-Child is 1.4. While the ANK of key selections will vary with the messages generated, these sample sentences provide a rough estimate of the Gateway's efficiency across messages generated during a routine conversation.

How was the Vocabulary Selected?
- Frequency of Use
- Syntactical Development
- Promote Language During Leisure Activities
- Academic Needs

Frequency of Use
The vocabulary selected for use within each of the Gateway© page sets are based upon research and by analyzing the vocabulary contents of the communication boards of a individuals who can effectively communicate across a variety of topics appropriate to their age and interests. (Beukelman, Jones, & Rowan, 1989; Bruno,

1989; Carlson, 1981; Raban, 1988).   All Gateway[©] page sets contain a "core" of words such as eat, drink, go, want, have, and big. No matter what phase an individual is within their language development, these words are a part of one's core vocabulary. Several books from a first grade curriculum were reviewed to analyze the vocabulary contents. Frequently occurring words were included as a part of the core vocabulary.

Some words may be important at one phase of an individual's life and not at another. For example, bubbles are important to young children. A razor may be important to an adolescent or adult. Versions Gateway 12-Child and 20-Child address the needs of preschool and primary aged children. Vocabulary targets these needs and interests. Gateway 30-Teen, intended for use by adolescents, includes words that address many activities of daily living. Both versions of Gateway 40, and 66 address the needs and interests of older children and adults.

Syntactical Development

Grammatical morphemes (e.g., tense markers, plurals, possessives) and the comparative and superlative adjective forms are included within Gateway to promote age appropriate syntactical development. Auxiliaries and word morphology function keys have been incrementally added to the page sets in an order and complexity that parallels normal syntactical development. Vocabulary has been included across all grammatical categories to support sentence formation.

It is the assumption that children using versions 12, 20 and 40 of the Gateway page sets will be receiving speech-language intervention to promote linguistic competency enabling them to form complex syntactically correct sentences. Word endings are systematically included so that each can be taught within an educational or therapeutic setting and then used in the course of routine conversation.

Some users of Gateway 40-Child and most users of Gateway 40-Teen, Gateway 66-Child and Gateway 66-Teen will be fully competent in appropriately adding word- morphology endings and also in using the correct pronoun forms. The *Dynamic Morphology* feature of Gateway automatically adds the word ending to buttons resulting in a keystroke savings when generating complex messages. The *Dynamic Morphology* also supplies the correct object pronoun form on the Main page when certain prepositions are selected. The *Dynamic Morphology* increases efficiency by minimizing the required number of keystrokes needed to generate correct word forms.

Promote Language During Leisure Activities

Young children learn develop language through play. Older children and adults frequently initiate communication surrounding social activities. Social vocabulary and topic pages have been designed to facilitate device use during recreational activities. For children, pages of jokes, riddles, books, and several popular board games are included. This vocabulary is consolidated within the Tab sets located within the Themes folder.

Academic Needs

Many of the individuals who use Gateway[©] for the TouchChat are school-aged children and teens. To enhance a user's classroom participation and to better enable his or her ability to demonstrate mastery of the core curriculum competencies, all

versions of Gateway contain requisite vocabulary for Morning Meeting and links to pages where targeted academic vocabulary can be added. Gateways 40-Teen, 66-Child and 66-Teen contain the states, capitals, countries and planets. The academic pages have also been designed to interface with the Main page so that a user can respond using single words or us. A TEST page can enable a user to complete a test or worksheet without significant adult assistance.

How is Gateway™ Organized?
- Fitzgerald Key Format
- Consistent Color-coding
- Conversational MAIN Page with Links to Grammatically Organized Word Categories
- Semantic Power Strips
- Dynamic Morphology
- Themes Folders for Academic, Recreational and Community-based Activities

Fitzgerald Key Format

While the Fitzgerald Key format was a designed as a tool to teach language to the deaf, the presentation of words in categories (i.e., people, verbs, little words, descriptive words, objects, places) reflects the format of a simple declarative sentence. Little words include articles, conjunctions and prepositions. Descriptive words include adjectives, adverbs and time words.

By selecting a word from each category, and moving from left to right across a page, a person can form a simple declarative sentence. Young users can learn to form sentences that mirror the flow of natural language (e.g., "*who - is doing – little words - descriptive words - what - where*" - "Dad is eating the big cookie".)

Consistent Color-coding

A consistent color-coding strategy is used with the Gateway page sets. Word categories are colored to correspond with the Fitzgerald Key format (Fitzgerald, 1954). That is, People = yellow; Verbs = green; Little Words = pink; Describe Words = blue; Things = orange; and Places = purple. Efforts have been made to assign a color to a word morphology button that matches the part of speech with which it is typically associated.
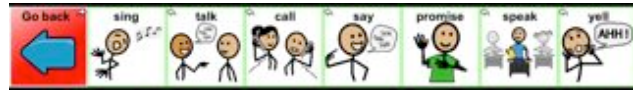
Conversational Main Page with Links to Grammatically Organized Word Categories

Within each vocabulary set, the Main page contains a core of high frequency words and, depending upon the specific version, links to the following categories: People, Verbs, Little Words (i.e., articles, prepositions, conjunctions), Describing

Words (e.g., adjectives and adverbs), Things, Foods, and Places. In the Gateway 40, and 66 page sets the user can access spelling from the MAIN page.

Semantic Power Strips

Semantic Power Strips, sets of paradigmatically associated words, are a unique feature of the Gateway page sets. Power Strips accessed by selecting the "root" word. Root words are marked by a "+" sign and a solid colored button. The *Semantic Power Strips* provide the user with a focused set of synonyms that offer greater diversity of expression. Words contained within a *Semantic Power Strip* are typically of the same grammatical class as the "root". The strips may include a range of 3-9 associated words. Semantic Power Strips can help a young user learn new words, which can ultimately build the child's vocabulary. They offer advanced users easy access to a richer vocabulary.

Dynamic Morphology

Dynamic Morphology is a form of "linguistic prediction" that reduces the number of keystrokes required to generate a syntactically correct sentence. Within the Gateway Vocabulary on the TouchChat, it occurs for three forms of the verb – present progressive, 3rd person singular, and the infinitive form of the verb. The present progressive verb page is presented when a user selects a form of the verb "to be". When other words are used prior to selecting the verb, the dynamic morphology feature no longer remains active. The 3rd person singular verbs are presented to the user after a noun or subject pronoun is selected. In English there are some verb forms that are followed by the infinitive verb form. Examples of these verbs include need, want, get, try, and have. Selecting any of these verbs that are a part of the Gateway core will open a page containing the infinitive form of the verb. Some prepositions require the use of an object pronoun. Upon selecting these pronouns, the subject pronouns are replaced with object pronouns on the Main page. Recognizing that instances will occur when the selection presented is not the one targeted by the user, a "Reset" button is provided.

Themes Folders for Social, Academic and Community-based Activities

The MAIN page of each Gateway page set (Gateway 12 excluded) contains a "My Themes" folder that provides the user access to a variety of social, academic, leisure and community-based pages. Typically the *Themes* folder includes the following –

About Me, About You, Comments, Questions, Time to Learn, Time to Relax and *Time in Town* folders. Each folder contains a set of related words, messages, or folders that contain a thematic activity.

For example, within Gateway 40–Child, the *Time to Play* tab provides a set of activity folders that enables the user to communicate within a variety of recreational activities. Some activities such as the Tea Party and Dress-Up promote language use during imaginative play activities. Books such as, *Good Night Moon* and *Where the Wild Things Are,* are designed to address literacy development.

Time to Learn Tabs contain topic pages related to each month. Each month's page contains a greeting appropriate to that month and some basic information relevant to the given month. For example, on the FEBRUARY page the child will find a Valentine's Day greeting, statements about the season and the number of days that are in the month. There are also a variety of messages related to topics such as leap year, Ground Hog's Day, President's Day, and Valentine's Day. Depending on the number of locations the *Time to Learn* Tab may also include pages and functions that would maximize classroom participation and independence.

Customization

Domains to Customize
- Personal Information
- Needs and Interests
- Educational and Social Information

To customize the Gateway program the facilitator needs to examine three domains: (1) personal information, (2) needs and interests, (3) educational and social information. Changes considered appropriate for the user need to be made. The process of customizing Gateway requires knowledge of: (a) the augmented communicator's communication abilities, needs and goals, (b) the vocabulary within the Gateway Vocabulary, (c) the color-coding system used within Gateway, and (d) the fundamental categorization of the Gateway Vocabulary. In addition, the facilitator must know basic operation of the TouchChat App. Those needing assistance with technical operation of the TouchChat App should refer to the TouchChat App tutorial resources.

Needs and Interests

Unless the Gateway vocabulary matches the needs, wants, interests and "personality" of the user, it is unlikely that the user will maximize use of the program. A second step in customizing Gateway is to add and/or change key vocabulary items and expressions. For example, the *Foods* page contains an assortment of foods and beverages considered representative of the typical foods people eat. This may or may not match the preferences of the individual using the Gateway Vocabulary. Changes should be made to this page as needed to allow the user to communicate effectively. Family and user input should be considered in determining what changes, if any, are

needed. Other pages such as Things and Places will also require the same type of consideration in evaluating the "appropriateness" of the vocabulary provided.

Educational and Social Information

In order to help an individual meet his or her educational goals, it is imperative that the child be able to express the vocabulary targeted for the range of spoken and written educational tasks associated with each course competency. While it is recognized that Gateway does not contain all of the educational vocabulary needed by each user of this program, it is believed that Gateway does create a framework to enable a child to meet many educational competencies. Individuals working with a Gateway user (i.e., the teachers, therapist, aides) must take an active role in adding appropriate vocabulary to this program. This requires that these individuals become familiar with the contents of Gateway. It also requires that they know what vocabulary is needed to complete daily lessons. Vocabulary that is needed, and that is *not* currently stored within the Gateway vocabulary, should be added.

Within the school curriculum, there are several areas targeted for potential device use. These include *Math, Calendar* or the morning routine, and *Monthly thematic* activities. Pages have been created for each of these areas and they should be customized to maximize the child's classroom participation as needed.

Implementation
- Where Do We Begin?
- Transitioning to Gateway™
- Teaching Language Through Use of the Single Word Vocabulary:
- Therapist's Role and Responsibilities
- Evaluating the AAC User's Abilities
- Learning to Communicate with Gateway
  - Modeling as in Intervention Strategy
  - Expansion as in Intervention Strategy
  - Teaching Vocabulary Contents and Location.
  - Highlight the Organizational Structure.
  - Using Gateway to Converse.
  - Create Opportunities to Learn New Words
  - Reading
  - Writing
  - Learning Gateway Through Traditional Language Intervention.
  - Communicating Through the Academic Pages
  - Using the Recreational Pages

Where Do We Begin?

The specific approach used to implement Gateway Vocabulary will vary with the needs and language abilities of the user. It is the philosophy of the author that Gateway be introduced to the user in a variety of functional contexts. Successful implementation requires a commitment on the part of the individuals working with the user (i.e., the facilitator, teacher, SLP) to become familiar with Gateway's vocabulary contents and the location of these words. It also requires a commitment to customize the program to match the needs, interests and abilities of the user.

Transitioning Across Gateway Page Sets

While individuals may begin using Gateway with the Child or Teen location page set, the developmentally based design of the page sets allows for a relative easy transition from one page set to another. That is, a user may begin using Gateway 20-Child, transition to Gateway 40-Child and eventually transition to Gateway 66-Child or 66-Teen. For the young users, the gradual introduction of developmentally appropriate word morphology features enables them to begin to develop language with the tools appropriate for their age and abilities. The consistent color-coding helps users know where to locate various word classes and this remains consistent throughout. Also, once a word is designated as a *thing*, it is always a designated as a *thing*. The category exemplar to which a word has been assigned (e.g., bubbles to "Thing") will not change. A subordinate category may be assigned (e.g., Toy). The use of the subordinate category will vary with the page set based upon the number of buttons per page.

Because of the subtle differences between page sets, it is optimal to systematically introduce an individual to a page set within a therapy or other learning environment before fully transitioning them to a more advanced page set. A SLP, teacher, parent or aid should help them become familiar with the new contents and locations of the vocabulary. Once they demonstrate a basic comfort level in communicating with the new page set the transition to the new page set can be formalized.

With the Gateway Vocabulary for TouchChat, customizations made within one level do not transition to the next level. That is, if one has programmed names, changed food items, personalized toys, and the like, these changes will exist only within the file in which they are made.   Someone working with the individual must help them through this process. It is critical that the personalization of names, address, food choices, etc be made so that the user immediately has this needed vocabulary.

Pages from a different page set may be imported into a Gateway file, however, if significant customization has been made, decisions would need to be made as to whether or not to adjust the number of symbols per page and how the original customizations will be added.

Teaching Language Through Use of the Single Word Vocabulary:

Each Gateway file contains a core of high frequency words. Learning the contents and location of this core vocabulary is only the first step in helping someone to become a competent communicator. Variables such as cognitive/language abilities, behavior, attention, motivation and frequency of use of Gateway will all impact a user's ability to gain proficiency using Gateway to communicate. The key to helping a child become a successful communicator when using Gateway is to provide effective and appropriate language intervention. That is, if a child is communicating using single words, that child needs to have guided intervention to systematically learn to combine words to form more complex messages. The environment needs to be engineered to promote device use and strategically target various language forms.

Teaching language to an AAC user is not radically different from teaching language to a child who speaks. The major difference is that for an AAC user, the medium for expression is an AAC device as opposed to speech. This being the case -

(1) the therapist must be knowledgeable of the vocabulary contents and location of words contained in the system, (2) the child must learn the contents and location of available vocabulary, and (3) words targeted for intervention activities or routine daily activities must be available within the communication device or the AAC user cannot express them.

With that in mind, the procedure for teaching language to an AAC user requires that the therapist: (a) evaluate the user's abilities; (b) define appropriate long and short term language intervention goals and (c) establish effective intervention activities to enable the AAC user to achieve the goals.

Therapist's Role and Responsibilities

Prior to initiating intervention with the child, the therapist must first become familiar with program's vocabulary. The therapist must know what words are included in the Gateway Vocabulary and how to access these words. Unless a therapist is competent in communicating with the child's vocabulary set, the therapist can neither develop appropriate therapy activities nor serve as a model in demonstrating or expanding the child's utterances.

Modeling, or aided language stimulation (ALS), is an appropriate and effective language intervention technique that a therapist can use when working with an AAC user. This technique can be used to teach the Gateway core word vocabulary. Using this technique, a communication partner interacts with the AAC user using the user's AAC system. Use of aided language stimulation requires the partner to know the contents and location of the Gateway Vocabulary. The partner can model a simple sentence (e.g., I like candy.) or follow the statement with a question (e.g., I went to grandma's yesterday. Where did you go?).

Learning the vocabulary of each of the Gateway Vocabulary can be best accomplished by personally using the device to create sentences. If your student is going to be using Gateway 20-Child or 40-Teen, go through the Preschool Language Scale using the Gateway program to answer the test questions. This functional activity will help provide a therapist with a working knowledge of the program's vocabulary. If a student will be using Gateway 66-Child or 66-Teen reading a primer level book would be an excellent training activity for the therapist. Books at this level contain words across all grammatical categories. The activity will teach the therapist how to navigate the system using words and word endings. It will also create an awareness of what words are *not* stored in the program.

Evaluating the AAC User's Abilities

While one may have a sense of a user's abilities and limitations, it is often helpful to formally assess a child's skills to set appropriate goals and to measure or document progress. Gateway provides an AAC user the tools to demonstrate his/her abilities and weaknesses. This developmentally based application program contains the necessary vocabulary and word morphology features to allow a child to respond to questions on several formal tests. The child's responses will be influenced by his/her knowledge of the vocabulary contents of the system. Assuming the child has a solid knowledge of the vocabulary contents of the Gateway page set being used, the user's responses would be indicative of his or her language abilities. The tests have not been normed on this population. As such, they should be used to determine

performance skills rather than to obtain percentiles, standard scores or mental ages. A user's physical and behavioral characteristics need to be considered in the testing process

Unlike working with a speaking child, evaluating an AAC user's expressive language performance must follow the user's introduction to his/her communication system (e.g., Gateway Vocabulary). If we want to see how a child uses language, we must first let the child become familiar with the core vocabulary. Depending upon variables such as how often is the child given access to the system, how much vocabulary it contains and how much intervention is being provided, a therapist's assessment can occur within 3-4 weeks after the system is introduced. The more opportunity the child has to become familiar with the vocabulary, the more reliable the assessment will be.

Once the child learns what words are available in the system and how to access these words, one can then assess how the child combines these words to formulate messages. One can also evaluate what types of communicative functions the child is using. Assessment can be informal or formal. Language measures can include a language sample or they can include formal test measures such as the Preschool Language Scale (PLS) or the Test of Language Development (TOLD).

The Gateway Vocabulary files (20-Child and 40-Child) contain the vocabulary a child needs to respond to questions on the Preschool Language Scale. That is, it gives the child the tools he or she needs to demonstrate his expressive language abilities. Both Gateway 66-Child and 66-Teen contain the vocabulary and morphological endings needed to take the TOLP. A therapist can administer these tests as they would to a speaking child. Most of the targeted words the child needs to answer the questions are contained within these Gateway files. Since the Dynamic morphology feature is active in both versions of Gateway 40 and 66, utilization of the correct ending may not truly indicate that the child has mastered the word form.

Depending upon a child's access additional time may need to be given to complete the test procedure. While it may take several therapy sessions to complete a test, knowing the strengths and weaknesses of the child can enable to therapist to: (a) obtain a baseline of the child's language functioning, (b) establish appropriate intervention goals and (c) objectively document progress. The therapist can re-evaluate the child's performance using the same language measurement tool on an on-going basis. It is important to note that the purpose of the testing is to assess abilities and not to report age-levels and norms. These tests have not been normed on individuals using AAC devices and as such, the Standard Scores and Percentiles cannot be reported as if they have been.

Learning to Communicate with Gateway

The general strategies used to teach Gateway are straightforward. The primary goals must be to insure that the user learns the vocabulary contents and organizational structure of Gateway. Once specific language intervention goals are identified, functional activities can be designed and implemented.

For an individual who has functionally used a communication board with a significant number of single words prior to receiving Gateway, introduction to this program should flow as a logical extension of his or her use of the manual board and to the teaching strategies already in place. That is, the individual will need to be

oriented to where vocabulary is located, and what vocabulary is available, but it would be expected that the individual's performance with the Gateway program should eventually mirror or exceed his or her performance with the manual board. As the individual learns more vocabulary, and is exposed to advanced language features, it would be expected that the individual's language performance would improve. Strategies that have been used successfully to teach language should be continued.

<u>Modeling As An Intervention Strategy.</u> For a child who has not previously used a single word vocabulary system, an effective clinical intervention strategy is the use of modeling or aided language stimulation. In modeling system usage, the facilitator (e.g., parent, aide, teacher, therapist) takes a lead role in using the device to talk with the child. Using this approach the child is indirectly guided through the system. The child sees where specific vocabulary is stored, and what page links must be accessed to select targeted vocabulary. The child may also be exposed to a range of grammatical morphemes such as possessives or contractions that can be used in expressing different word forms (e.g., questions, statements, imperatives).

Modeling serves an additional purpose for both the child using the system and the adults working and or interacting with him. It reveals what vocabulary *is* and *is not* available within the page set. It serves as an indirect approach to determining what vocabulary needs to be added or deleted to personalize and optimize the system for the user. Modeling demonstrates that the spelling and word prediction feature may be accessed to express words not in this vocabulary program. It can show a child how to select a word using word prediction.

Children typically find dynamic display systems easy to navigate. Page links lead the child to explore new vocabulary. Modeling lets the facilitator assume the role of "Tour Director". The facilitator shows the child which "locations" to visit and does so in the appropriate communicative context. Modeling may also serve to demonstrate new and more complex ways for the child to use language.

<u>Expansion As An Intervention Strategy.</u> Expansion is another strategy that can be used to improve a child's language performance. The facilitator can use the vocabulary within the Gateway Vocabulary to expand the complexity of the child's messages. For example, if the child says, "I go school." The facilitator can offer positive feedback, clear the display and model the expanded message, "I am going to school." Expansion involves adding or expanding the message that the child originally generated. The goal of expansion is to help the child learn to create more complex messages than he or she is currently using or to construct syntactically correct sentences. Many children who have not had the opportunity to use a language board, or a device with grammatical markers or functions words as a part of the core vocabulary, may need instruction to learn how to form age appropriate messages in the course of routine conversation.

Some children determined to be candidates for the Gateway Vocabulary may exhibit language disorders or disabilities. They may understand language, but they may not know how to form sentences or even what to say. Language intervention strategies and approaches typically used with speaking children who exhibit similar limitations, can be modified and implemented with children using the Gateway Vocabulary.

Teaching Vocabulary Contents and Location. Teaching contents and location can be accomplished through focused intervention as well as through games and recreational activities. If the user does not know what words are available to him/her to create a message, unless the user can spell, he will not be able to formulate messages to express needs, wants, or ideas. Some strategies that can be used to teach the single word vocabulary include:

(a) highlighting the organizational structure,
(b) using Gateway to "talk",
(c) creating opportunities to learn new words,
(d) reading,
(e) writing and
(f) traditional language intervention

Highlight the Organizational Structure. Regardless of which Gateway page set (i.e., 20, 30, 40, 66) selected for the user, the augmented communicator should be systematically introduced to the MAIN page, which is the core of the single word vocabulary. Each of the color-coded word categories should be pointed out along with its corresponding color-coded page link. A rationale for the color of some command keys has been established. It is felt that the color-coding may help some augmented users learn to locate words more quickly.

Using Gateway to "Talk". Typically children who use AAC don't talk for the purpose of sharing information. They use their devices to request and to respond. Efforts should be made to engage the child in a dialogue. Teach the vocabulary by talking with the augmented communicator. While this dialogue may need to begin with a question such as "What did you do last night". The goal would be that even if the child responds with a single word answer – "baseball game", modeling and expansion would used to help the child describe the activity or event with greater detail. That may mean that more questions are asked of the child and it may be that examples are provided to the child in the form of sharing information.

Create Opportunities to Learn New Words. Based upon the age and or cognitive level of the augmented communicator, it may be helpful to systematically introduce each page, and when doing so, integrate vocabulary from other pages as appropriate. To teach the "people" on the Main page or on the People page, a therapist can show a user his family photos or other people. The user can tell "who" the person is; name the other people who live in the same house; tell how the person is related (i.e., friend, aunt, uncle) and so on.

Activities such as placing objects in a bag and having the child "guess what's in the bag" or selecting something and then naming it, can be used to teach items on the *Things* page. Lotto games can be created to teach other pages. Games such as Outburst, Jr. can enable a user to have fun and enjoy learning to locate words within targeted categories. "Simon says" can be played to teach verbs or action words. Pages can be printed or copied onto the appropriate colored paper for each category to help teach the color-coding in addition to the vocabulary contents.

Similar activities may be done to introduce the other pages such as, *Little Words, Describing Words* and *Places*. To teach the verbs, the child can play Simon Says or a pantomime game. Allowing the child free time to explore the vocabulary may also serve as a powerful learning tool.

Reading. Not all communication is spoken. Children enjoy being read to and also having the opportunity to read out loud. There are some books stored in Gateway that children can read. While they are selecting a "button" to read an entire page, after they read a page or the entire story, they can be asked questions about the story, where they respond using the Gateway core word vocabulary. Another option may be to read the story with the user and the adult stops. The child must "read" the next word, using the Gateway core or fringe vocabulary. There are many ways to engage a child in a literacy activity with Gateway© and it is an excellent way to help a child improve his/her competency with Gateway and their expressive language abilities,

Writing. Writing is also an excellent way to help a child master the Gateway core and also to build expressive language abilities. Writing activities can be as simple as having the child complete a fill in the blank activity, or it can be as complex as having a child write a narrative. Most importantly, the writing activity should match the child's expressive language abilities.

Learning Gateway Through Traditional Language Intervention. For younger children, playing with a doll house can not only teach the names of family members and places within the house, it can be a wonderful activity for teaching a child to form two-word messages describing what they did with a doll or what they want you to do. Sentences such as "wash-baby", "go-eat"; play-upstairs can be created using the Gateway program. A functional language activity helps to teach a child what vocabulary is in the device and where it is located, and it help teach the child language form as well as the power of communication.

The Gateway Vocabulary contains many of the frequently used words of our language. As such, for somewhat older children many games and therapy materials can be used with only minimal modifications. Some materials may require more modifications than others. Two good examples of therapy materials that require little modifications are *Just for Me!* (Concepts) and *"SPARC* for Grammar" produced by LinguiSystems. Some commonly used games and therapy activities include: Chutes and Ladders; Jeopardy, Outburst, Jr., Secret Square; 1st grade level reading books, the Clifford book series, or single line storybooks.   When an "off the shelf" game or activity contains words of little interactive value to the AAC user (e.g., kite, mouse, umbrella), it is suggested that the activity be modified rather than changing the vocabulary of the Gateway program to accommodate the program unless changing that vocabulary will ultimately increase device use long term.

There are many ways to teach Gateway. How it is taught can, and should, vary with the needs and abilities of the user. The suggestions provided here are just that, suggestions. The user's speech language pathologist is key in the implementation process. A therapist or communication partner should communicate to the child while using Gateway, creating messages with the words of the Gateway program.

Communicating Through the Academic Pages. Enabling a child to master the core curriculum standards is a challenge for those using AAC devices. It is impossible to include all needed educational vocabulary in any page set. Even if the space was available to do so, recalling the location of the needed vocabulary would be extremely difficult to achieve based the fast pace of a regular classroom setting. In an effort to help users of Gateway page sets actively participate in their educational programs and/or demonstrate mastery of the core curriculum standards a framework for

customization has been established. There are open pages tied to subject folders. These can be customized as needed. It is recognized that a year's worth of classroom vocabulary cannot be stored, but typically there is room to accommodate chapters.

For some simple areas such as Morning Meeting (e.g., Circle Time) the typically used vocabulary has been included in each of the page sets. That is, a child can describe the weather, and tell the day, week, or month.

<u>Using the Recreational Pages</u>. There is no question about the fact that children enjoy play activities. Children can and do learn through play. Within Gateway there are a variety of pages designed included to help children develop their language skills during play. Typically, a child would need help from their communication partner to access appropriate messages while playing the game.

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Relevant Websites
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- Preschool/Ktgn Conversation – http://aac.unl.edu/VLN1.html
- Young Adult Conversation Augmented Communicators – http://aac.unl.edu/VLN3.html