Gateway for Snap

Introductory Manual

by
Joan Bruno, Ph.D., CCC-SLP

Highlands, NJ, USA
www.gatewaytolanguageandlearning.com

An Introduction to Gateway©

What is Gateway©?

Gateway to Language and Learning©, (Gateway) is a series of core word page sets that supports the language learning needs of young children and facilitates efficient communication for the competent communicator. There is consistency in the design of all page sets to enable a user to seamlessly move across grid sizes (e.g. 4*6, 5*7, 6*11, etc.) or advance to the next level of complexity (e.g., Child Language and Literacy Development to Advanced Communicator) while maintaining ones level of communicative competence.

The underlying philosophy of Gateway is to enable effective and efficient communication. All individuals need to be able to say what they want to say, when they want to say it, and to be able to do so with a minimum of effort. Within Gateway, effective communication is achieved by providing AAC users access to a high frequency core vocabulary and fringe vocabulary that is selected to match a user's age, needs, interests, and linguistic abilities. Efficient communication is achieved by minimizing the number of key selections required to speak each word. The Gateway vocabulary was organized to give the user access to its core vocabulary using an average of less than 1.5 key selections per word.

Snap + ® is a robust AAC App. It supports the powerful Gateway features such as *auto-close pages*, *Semantic Power Strips*, and *Sentence Development Strips*. It has a built-in grammar feature that replace the *Dynamic Morphology* features used in previous versions of Gateway. Gateway for Snap + contains seven (7) page sets – Child Functional, Teen and Adult Functional, Child Language and Literacy, Advanced Communicator, Text, Gateway Pro, and Scan Pro. Within each of these levels there are a variety of grid sizes ranging from 9 - 143 locations.

This manual is intended to provide an overview of Gateway© as it has been designed for use with the Snap + App. It defines targeted user abilities for each vocabulary level, key design features and how these features affect language development and effective communication.

The Origin of Gateway©

In 1997 Gateway was designed as a custom page set to enable Frankie, a 6-year old 1st grader with cerebral palsy, to efficiently and effectively communicate his needs and wants and to be able to compete educationally in his mainstreamed educational environment. Prior to using Gateway, he had a manual communication board with well over 150 symbols that he effectively used to express needs and wants. It did not provide him a voice to interact with his typically developing peers nor did if offer him a means to independently function in his educational setting or achieve to the fullest of his potential.

Frankie needed a page set for his high tech device (i.e., DynaVox 2C) that he could use to not only respond to questions in class but one that enabled him to create complex messages. He wanted to read his 1st grader reader aloud in class, like other

students did. The school wanted him to achieve to his highest potential. As his speech-language pathologist I was charged with the task of making these requests a reality.

The original page set contained a core of approximately 800 root words, selected word morphology functions keys, and strategically designed auto-close popups. His MAIN page was linked to pages containing words from grammatical categories such as people, verbs, descriptive words, objects and places in a format similar to his manual board. It also contained a link to a spelling page with word prediction. The initial core vocabulary included many words identified as frequently used by young children. It also contained all of the words on his manual communication board and high frequency core words from his 1st grade curriculum. His high tech page set allowed efficient message generation and enabled unrestricted communication. On average, he was able create a sentence using an average of 1.3 key selections per word.

In 1998, Gateway to Language and Learning© became commercially available page set for the DynaVox device. It presented a new approach for storing vocabulary on a dynamic display device (Bruno, 1997). Over time, with input from users and the field, Gateway evolved to become a series of page sets that addressed the needs of young children through adults. Many children, like Frankie, who began using Gateway© as a child, have become effective communicators and college graduates.

At present, Gateway continues to meet the needs of children and adults. In addition to the page sets that have existed over the years, Gateway for Snap + includes new page sets designed specifically to meet the needs of students with ASD that includes a rich sensory-based fringe vocabulary. Gateway contains an expanded array of grid sizes including 88, 108 and 143 for all Page sets. Over the years Gateway has evolved to reflect advances in technology and best practices in AAC.

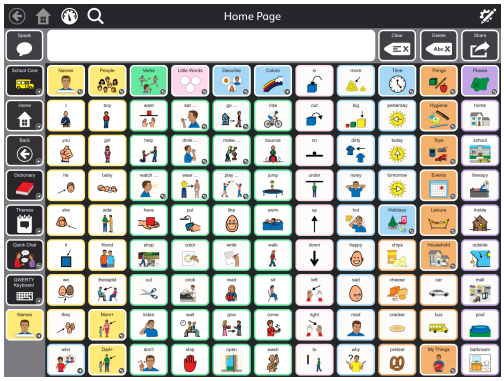
What's Included in the Gateway© Vocabularies

Gateway© contains 7 Page sets – (a) Child Functional, (b) Teen/Adult Functional, (c) Child Language and Literacy, (d) Advanced Communicator, (e) Text, (f) Pro, and (g) Scan Pro. Each of these levels contains a high frequency core and fringe vocabulary relevant to the targeted population. An associated set of theme pages, matches leisure, educational and recurring conversational needs. Within each vocabulary level, there is a range of grid sizes from a 3*3 (9 location) to an 11*13 (143 locations).

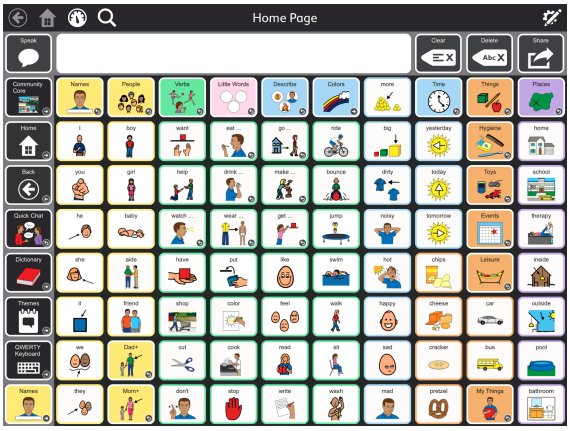
Paradigm for Snap + Gateway

Child Functional	Teen/Adult Functional	Child Language and Literacy	Advanced Communicator	Text	Pro	Scanning Pro
3*3	3*3	3*3				
4*5	4*5	4*5				
5*6	5*6	5*6				
5*8	5*8	5*8	5*8	5*8		
6*10	6*10	6*10	6*10	6*10		
8*10	8*10	8*10	8*10	8*10		
9*11	9*11	9*11	9*11	9*11		
					13*11	13*11

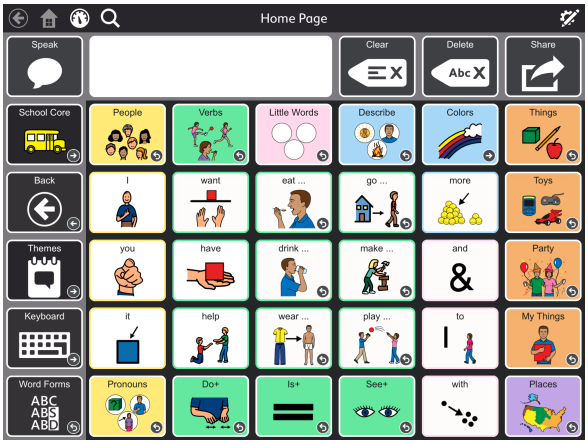
CHILD FUNCTIONAL is designed for children who benefit from a functionally based core vocabulary and a sensory-based fringe vocabulary. It has seven (7) grid sizes that can facilitate the development of multi-word messages. Consistency of vocabulary organization supports the principles of language acquisition through motor planning. It contains HOME and SCHOOL CORE pages that seamlessly link to relevant topical vocabulary without losing access to the high frequency core. Theme pages provide activities to promote communication in educational and social settings. Grid sizes range from 3*3 to 9*11. Below are the Home pages of Gateway 3*) and Gateway 9*11.

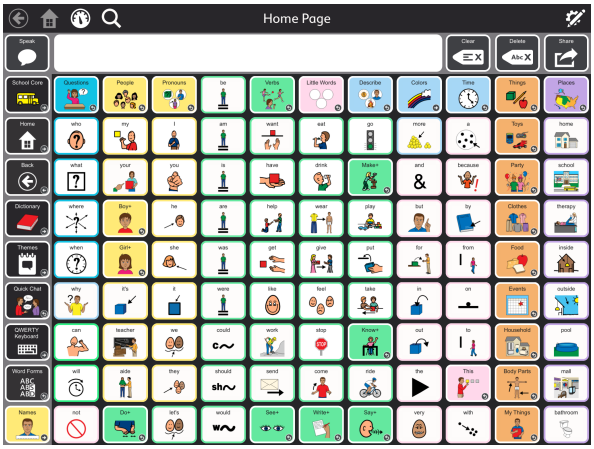


TEEN/ADULT FUNCTIONAL is designed for individuals with limitations in expressive language abilities who generate multi-word messages but have difficulty using correct word order and/or adding word endings. It has seven (7) grid sizes. Through use of a HOME page and a SCHOOL/COMMUNITY Core page users can seamlessly access relevant topical vocabulary using a vocabulary that enables spontaneous communication in home, school, vocational and leisure environments. There is limited support for use of “Little Words”. The use of word morphology features can be controlled at a system level. Theme pages help to promote communication across a range of leisure and community-based activities. Grid sizes range from 3*3 to 9*11. Below are the Home pages of Gateway 4*4 and Gateway 8*10.

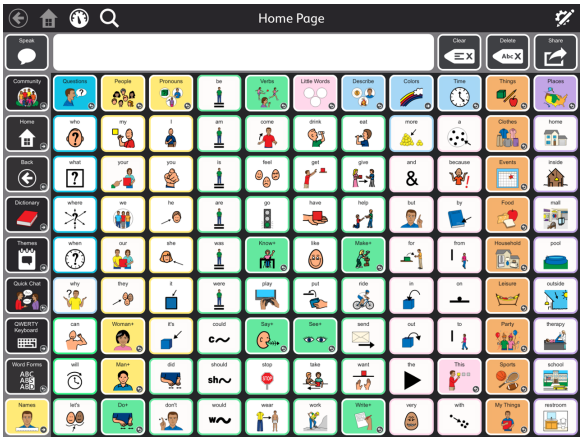


The **CHILD LANGUAGE AND LITERACY** is designed for children acquiring language following the typical sequence of language development. It has seven (7) grid sizes providing options for children who are just learning to combine symbols to form multi-word messages as well as options for those who are learning to form complex syntactically correct sentences. HOME and SCHOOL CORE pages seamlessly link to relevant topical vocabulary without losing access to the high frequency core. In several of the basic arrangements, *Sentence Development Links* are used to provide a simplified approach to facilitate sentence formation. *Semantic Power Strips*, sets of paradigmatically associated words, enable users to access related vocabulary without scrolling through pages or complex arrays. All grid sizes support use of the full range of grammar functions and the functionality of this feature is controlled at a system level. A set of THEME pages supports language development in school, play and social activities. Grid sizes ranging 66 from 3*3 to 9*11. Below are the Home pages of Gateway 5*6 and Gateway 9*11.

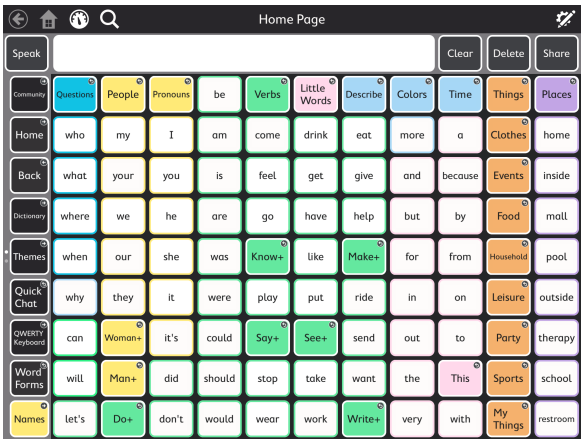




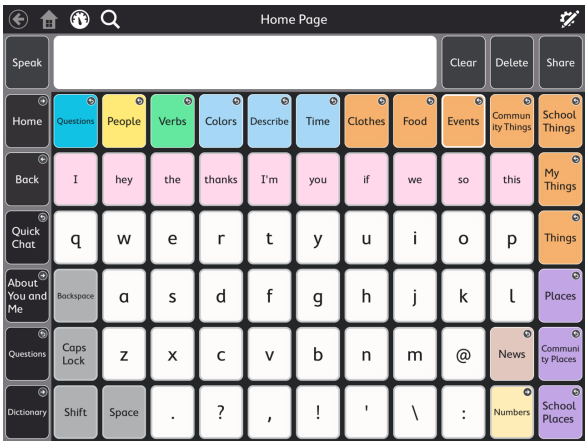
ADVANCED COMMUNICATOR is designed for individuals with advanced expressive language skills, who could benefit from an efficient and powerful core word vocabulary enabling complex message generation. It is a logical next step for children using the Child Language and Literacy page set, who now require a more mature vocabulary and greater efficiency in message generation to address their daily communication needs. Users can create messages using an average of less than 1.5 key selections per word. Theme pages support communication in recurring environments and activities. It contains five grid sizes ranging from 5*8 to 9*11. Pictured above is the Home page of the Gateway 9*11 page set.



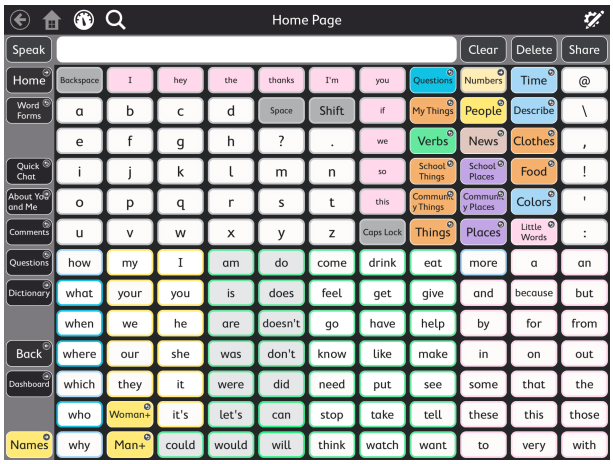
TEXT page sets are designed for teens and adults with advanced literacy skills, who seek a highly efficient *text-based* core vocabulary page set. This page set replicates the contents of the Advanced Communicator Level. The vocabulary is typically organized alphabetically to enable more efficient word retrieval. It contains five grid sizes ranging from 5*8 to 9*11. To the right is the Home page of Gateway 9*11.



GATEWAY PRO page set is designed for individuals who prefer to use spelling with word prediction as their primary mode of communication. This 11*13 page set mirrors the original version of Pro and contains the alphabet, folders to access core and fringe vocabulary and access to a high frequency core word vocabulary.



SCANNING GATEWAY PRO is designed for literate individuals who use scanning as their mode of access. These individuals prefer to use a combination of spelling with word prediction combined with a rich core vocabulary as their primary mode of communication. They also benefit from having access to a wide core of fringe vocabulary that may not readily be available through word prediction. The Snap version of Scanning Gateway Pro positions the alphabet in the upper left had quadrant of the page with 10-word prediction buttons surrounding the keyboard. Letters are arranged in alphabetical order. This 13 * 11 configuration is the same as Pro but has been optimized for scanning. The Main page of Scanning Gateway Pro is pictured below.



Why Gateway©

- Simple to Learn
- Developmental Model for Language Acquisition
- Consistent Vocabulary Placement Supports Learning through Motor Planning Principles
- Efficient Organization Results in Minimal Keystrokes Per Word
- Achieving Core Curriculum Competences

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 some 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

Using Gateway, 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 Snap's word morphology

keys that are embedded systematically within Gateway, a child can learn to recode our language to achieve the same level of language competence as speaking peers.

While Gateway© meets the needs with children acquiring language through the normal sequence of language development, these children 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© to enable children who use AAC to expand their expressive language performance to become linguistically competent. Aided Language Stimulation is a highly effective and recommended intervention approach.

Consistent Vocabulary Placement Supports Learning through Motor Planning Principles

Individuals learning to communicate through the LAMP (Language Acquisition through Motor Planning) can also find the Gateway 8*10 through 9 * 11 grid sizes of benefit. These arrangements not only offer high frequency core words, but high frequency fringe vocabulary is also included. This can help to increase the specificity of a users output. The Home Page and School Core include many words needed for routine everyday conversation.

Efficient Communication Results in Minimal Keystrokes Per Word

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. All of the Gateway vocabularies have been designed to be as efficient as possible however the needs and abilities of the targeted user population as a major factor to guide page set development. The Child Language and Literacy and the Advanced Communicator page sets place a strong emphasis on syntactic development and performance respectively.

The following table presents sample sentences created using the single word vocabulary of the Advanced Communicator page set.

Advanced Communicator Comparison		**Key Selections**			
Message	# Words	**5*8** 40	**6*10** 60	**8*10** 80	**9*11** 99
We are going to eat chicken.	6	8	8	8	7
Can you help me?	4	5	5	4	4
I want to go to the mall.	7	5	8	8	8
Yesterday they helped me with my computer.	7	14	9	9	9
I want to get my sister a present.	8	11	11	10	10
Will you give it to me?	6	9	6	6	6
What do you want me to do?	7	9	9	9	9
She has to work tomorrow.	5	12	8	8	8

Total Spoken Words – Hits	**50**	**73**	**64**	**62**	**61**
Avg. # Keystrokes Per Word		**1.46**	**1.28**	**1.24**	**1.22**

Achieving Core Curriculum Competences

Many of the individuals who use Gateway© 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. Some of the page sets provide access to the states, capitals, countries and planets. Academic pages have been designed to interface with the Main page so that a user can respond using single words or complete sentence. A TEST page can enable a user to complete assigned tests or classroom worksheet without significant adult assistance.

Implementing Gateway©?

- Understanding Snap + Functions and Features.
- Understanding Gateway's Distinct Features
- Access the Appropriate Gateway Manual
- Customize the Vocabulary to Meet User Needs, Interests and Goals
- Implement the Appropriate AAC Intervention Strategies

Understanding Snap +'s Functions and Features

Gateway was designed using the Snap + App. Personalization or customization of Gateway© requires that that the person assigned with this task have a basic level of competency with the editing and operational functions of the Snap + App. The Snap + Manual can be found within the App by selecting the Edit function -> SYSTEM -> HELP AND TUTORIALS. Resources are also available through the Lightbulb feature.

Understanding Gateway's Distinct Features

Gateway page sets features such as *Sentence Development Links and Semantic Power Strips* were created using the programming features of Snap +. These features do not require any special considerations when customizing.

Sentence Development Links facilitate construction of multi-word messages. When a user accesses a verb, it is linked to a corresponding object page. Thus, it can help an individual with limited sequencing abilities or limited expressive language generate messages with increased specificity, that is a verb + object.

Gateway uses *Semantic Power Strips* as a tool to provide the user access to semantically related words and as a tool for enriching the expressive vocabulary of its users. After selecting a word from the semantic power strip, the popup automatically closes. This is done as a keystroke saving strategy, minimizing the need for a user to close the page after each word.

This same auto-close feature is used throughout Gateway's core vocabulary. When composing a message, a user can select words from the Home page and then

access fringe vocabulary selecting folders such as Things, Play, Events, and the like. Each time a word is accessed on the fringe vocabulary page, the page automatically closes. Depending upon where the page is and for what purpose, it will either return to the Home Page or to the Previous Page.

The Snap App includes a *Word Forms* feature predicts what research has shown is the logical or most frequently used morphologic ending. This is a Snap feature can be turned On or OFF in the settings menu. It is important to note that it may not always correctly predict a user's intent. For example, selection of a personal pronoun will result in all verbs showing past tense. If this is not the intended word form, the user needs to first select the incorrect word form and then correct it by selecting the "WORD FORM" key and then the correct word form. To enhance a user's ability to access a targeted word or word ending, on several grid formats all forms of the verb "to be" are present. For children using the Child Language and Literacy page set, it may be optimal to turn off the Snap grammar function and teach the child the correct word or word ending.

Access the Appropriate Gateway Manual

Manuals for Gateway include this introductory overview of Gateway and separate manuals for each vocabulary level. The Advanced Communicator and Text are combined into one manual, since the vocabulary contents of the Text level replicates the vocabulary of the Advanced Communicator. It is only the organization of the vocabulary on each page that differs. The same applies to the Gateway Pro and Scan Pro manual.

The manual for each Vocabulary Level is comprehensive and provides a detailed description of the respective Level's rational for vocabulary selection and organization, a description of the Gateway features that are used within the respective level and strategies for implementation. The Gateway manuals for Snap + no longer contain vocabulary sorts as the Snap + app has a search featured that can be used to locate if a word is stored within the page set and if so, where the targeted word is located.

Customize the Vocabulary to Meet User Needs, Interests and Goals

Unless Gateway's 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 Gateway. 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.

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 core curriculum 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 most educational competencies. Individuals working with a Gateway user (i.e., the teachers, therapist, aides, parents) must take an active role in adding appropriate vocabulary to this program as needed. 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 if and when determined necessary by the child's team.

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 also should be customized to maximize the child's classroom participation.

Implement the Appropriate AAC Intervention Strategies

The specific approach used to implement Gateway will vary with the needs and language abilities of the user. It is the philosophy of this 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, parent) to become familiar with Gateway's vocabulary contents and the location of these words. It also requires a commitment to personalize the vocabulary to match the needs, interests and abilities of the user.

Teaching Language Through Use of the Core: Each Gateway page set 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.

Aided Language Stimulation as an Intervention Approach**:** 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.

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 and to improve syntactic performance. 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.

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. The user can also access the search featured to learn where a targeted vocabulary item is located.

Regardless of which Gateway page set and grid size is 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 highlighted along with its corresponding color-coded page link. Color-coding may help some augmented users learn to locate words more quickly.

Using the Theme Pages: There is no question about the fact that most people enjoy leisure or unstructured activities. Children can and do learn through play. So too can teens and adults. Within Gateway there are a variety of pages designed included to help individual develop and expand their language skills during recreational, social and community-based activities.

Summary

Gateway is a powerful core word page set complemented with set of rich pragmatic pages. Since 1998, Gateway has helped many young children become competent communicators and achieve academic success. It has enabled competent communicator to efficiently and effectively meet their daily communication needs across environments. Success in using Gateway is highly correlated with how its user is supported in learning and in having access to his or her device.