

# THE WORDS & CONCEPTS SERIES

Words & Concepts I, II, III

## CONCENTRATE! On Words & Concepts I, II, III

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The Words & Concepts Series consists of three instructional programs and three companion game programs. Each Words & Concepts program uses a core vocabulary of 40 referential nouns in six related training modules that cover noun identification, categorization, function, noun association, as well as the concepts same and different. Each companion CONCENTRATE! On Words & Concepts game program is designed to exercise short term memory while reinforcing the lessons of the Words & Concepts instructional programs. Students compete with themselves or others, trying to find pairs based on vocabulary, category, function, or word association.

The acquisition of semantic knowledge is vital to the development of communication competence. Vocabulary development is one component of semantic knowledge acquisition. Recent developments in both linguistics and psycholinguistics have taught us that training semantic knowledge in relation to individual lexical items is not a simple task of labeling, even with referential nouns.

In designing the three *Words & Concepts* programs, various aspects of lexical and concept knowledge were covered using a core vocabulary of forty referential nouns for each. Considerations included concrete noun identification, categorization, word function, and association. In terms of concepts, aspects of same and different were chosen. The next section discusses in detail the content of each of the six training units with references to each component's relation to the overall acquisition of a lexicon.

### WORDS & CONCEPTS ACTIVITIES

Six integrated training units offer a choice of content options for the 40 core vocabulary items. *Words & Concepts* provides training in various components of lexical knowledge as well as the concepts of same and different... concepts critical to the induction of the full range of components represented in the adult lexicon. Some of the activities have additional training options. Table I summarizes the activities and their various options. As you can see, four of the six activities offer options to choose from.

#### Vocabulary

Discriminating a referential noun from other exemplars is important to building a lexical entry. While theorists have disagreed on the process of acquiring a referential lexicon as well as how that lexicon is structured, clinicians recognize



<b>Activity:</b> Options:	<b>Vocabulary</b> <i>Set 1, Set 2, Both Sets</i> The 40 nouns are divided into two sets of 20. You can train one set at a time or both.
<b>Activity:</b> Options:	<b>Categorization</b> <i>Review</i> A review section presents 20 nouns and the categories in which they belong.  <i>Inclusion</i> You choose the noun that belongs in a particular category.  <i>Exclusion</i> You choose the noun that does not belong in a particular category.
<b>Activity:</b> Options:	<b>Word Identification by Function</b> None
<b>Activity:</b> Options:	<b>Word Association</b> None
<b>Activity:</b> Options:	<b>Concept - Same/Alike</b> <i>Three Picture Word Matching</i> Two identical pictures represent the same noun and a third represents a different noun. You are asked to find the two pictures that are the same.  <i>Three Picture Detail Matching</i> All three pictures represent the same noun, with only details differentiating one picture from the others. You are asked to find the two that are exactly the same.  <i>Four Picture Detail Matching</i> You choose from among three pictures the one that exactly matches a given picture.
<b>Activity:</b> Options:	<b>Concept - Different</b> <i>Three Picture Word Differences</i> Two identical pictures represent the same noun and a third represents a different noun. You must choose the one that is different.  <i>Three Picture Detail Differences</i> Three similar pictures represent the same noun, with only details differentiating one picture from the others. You are asked to find the one that is different.

Table 1. Activities and Options

the Vocabulary activity to insure that their clients can at least discriminate the referential nouns from others.

You can meet the vocabulary training needs of a broad range of clients with this activity since training can be provided on three levels. Clients who are just beginning to acquire the nouns will benefit from instruction on Level I alone. This level of training provides antecedent instruction and cuing to the correct picture choice after a response has been requested by the computer. Use of the various levels of training is discussed in greater detail later.

The 40 nouns are divided into two sets of 20. Either set can be trained separately or you can train both sets together.

*Words & Concepts*

Set 1	shoes	socks	blouse	skirt
	coat	hat	shirt	tie
	bread	butter	hotdog	bun
	knife	fork	cup	pan
	glass	table	chair	lamp

Set 2	bee	hive	baseball	bat
	brush	paint	flowers	vase
	leaves	rake	hammer	nail
	lock	key	needle	thread
	saucer	lid	pitcher	bulb

*Words & Concepts II*

Set 1	finger	ear	hair	hand
	foot	sock	glove	scarf
	raincoat	pants	dog	mouse
	horse	bird	fish	bacon
	eggs	crackers	cheese	paper

Set 2	ring	earmuffs	ribbon	neck
	umbrella	belt	leash	trap
	saddle	nest	aquarium	baby
	crib	soap	water	pencil
	curtains	window	iron	ironing board

the importance of insuring that their language impaired clients understand words and can use them. Discrimination appears to be one of the early steps in lexical acquisition. This first activity provides vocabulary training on all 40 words used in the various activities. Before using any of the other activities, clinicians should use the testing mode with

### *Words & Concepts III*

#### Set 1

firetruck	rocket	airplane	tractor
ship	basketball	skis	poles
golf clubs	football	polish	broom
dustpan	mop	pail	armchair
footstool	bed	dresser	mirror

#### Set 2

fireman	astronaut	pilot	farmer
pirate	hoop	golf ball	field
rag	pillow	salt	pepper
sugar bowl	creamer	opener	bottle
letter	envelope	frying pan	spatula

### **Categorization**

This activity provides instruction on placing nouns in proper categories. The ability to classify nouns according to natural relationships is an important component of vocabulary development (Lenneberg 1967; Nelson 1972, 1973). Categorization problems are encountered by children with language-learning disabilities as well as those with mental retardation. Categorization problems are also prevalent in acquired language disorders. Aphasic and head injured adults frequently need retraining in this area.

The categorization activity uses Set 1 from the Vocabulary unit to provide instruction in four categories (*Words & Concepts: Clothing, Food, Furniture, and Utensils; Words & Concepts II: Body Parts, Food, Clothing, Animals; Words & Concepts III: Vehicles, Sports Equipment, Cleaning Items, Furniture*).

You have three different options for categorization training. In Review, a review section presents the 20 nouns and the categories in which they belong. With the second option, Inclusion, three pictures are presented and the user chooses the one that belongs in a particular category. In the last training option, Exclusion, the user chooses the noun that does not belong in a particular category.

### **Word Identification By Function**

Identifying words by function is another important aspect of lexical acquisition. The concept of whether lexical induction by function precedes learning by perceptual characteristics has been debated for some time (Clark 1973; Nelson 1974). Certainly, early concept development relates to a comprehension of how objects are used. In developing word meaning, aspects of object function are important.

Word Identification By Function trains the functional component of 20 of the core 40 nouns (e.g., "You press clothes with an iron"). Functional use of the various nouns covered in this activity should also be covered in live instruction.

### **Word Association**

This activity unit provides training on associating the 40 referential nouns. Word association is an important aspect of semantic development. Studies in word association suggest that there are different principles of organization among young children and adults (Nelson 1978). In free association tasks with referential nouns, adults and older children are most likely to give coordinate responses such as table/chair. Young children, on the other hand, are more likely to associate referential nouns by function such as apple/eat. Researchers have referred to this change in the organization of word associations as the syntagmatic-paradigmatic shift. Studies (Nelson 1978; Nelson & Nelson 1978) indicate that this shift probably occurs by six years of age in normally developing children. Children below that age tend to give syntagmatic responses while older children and adults give paradigmatic responses.

Word Association provides training in paradigmatic relations between the referential words in the core vocabulary. Strongly associated noun pairs have been chosen for this task (e.g., blouse/skirt).

### **Concept - Same/Alike**

This activity uses *Words & Concepts* nouns to provide training in the cognitive concepts of same/alike. These are important school and daily living vocabulary concepts. Training options include noun contrasts for initial training and detail contrasts for more advanced training. These activities emphasize the semantic realization of cognitive concepts.

Three options are offered within this training unit. Option 1, Three Picture Word Matching-Same, presents two pictures of the same noun and a third of a different noun. The user chooses the two nouns that are the same. This option provides training in matching two pictures. Only gross discrimination is required as the third picture is of another noun. Options 2 and 3 require close attention to details. Option 2, Three Picture Detail Matching, presents three pictures of the same noun with details the same on two and differing on the third. Users are asked to find the two that are alike. With Option 3, Four Picture Detail Matching, users are asked to find the picture that is the same as the target. Again, attention to detail is required. Both these options are excellent for small groups of users.

### **Concept - Different**

This activity unit provides training on the cognitive concept of 'different.' Discriminating and naming items that contrast with others in a set is an important cognitive achievement. Training options are available for gross as well as detail discrimination.

Two options are available within this training unit. Option 1, Three Picture Word Differences, presents identi-

cal pictures representing the same noun and a third of a different noun. Option 2, Three Picture Detail Differences, uses three similar pictures representing the same noun. As in the detail options working on the concept “same/alike,” only details differentiate one picture from the others. The user must find the one that is different.

### **CHOOSING APPROPRIATE INTERFACE & RESPONSE PARAMETERS**

After an instructor has chosen the particular content for a lesson, s/he is ready to determine appropriate elements of instruction. This requires the proper selection of interface, speed, and level. Laureate’s unique Parameters Menu lets you choose the appropriate lesson and interface parameters. This gives you the flexibility to meet the needs of persons with differing learning styles and ensures accessibility to all persons regardless of disability.

Selecting an appropriate interface method for a person with disabilities is an important aspect of setting up a lesson. Interaction with a program requires that the person use an interface method that takes into consideration attentional problems as well as physical limitations. For example, a youngster with a language learning disability may have no physical limitations that would preclude the use of the keyboard but it may not be a good choice as a response mode because the child gets distracted when s/he has to focus on the screen and then the keyboard.

For most users, you will want to select one of the three direct selection options: the keyboard, a mouse, or the TouchWindow.

When the keyboard interface method is chosen, the pictures appear with a number in the upper left hand corner. The learner uses the number keys (1, 2, and 3) to select the correct picture.

For persons without interfering physical or attentional problems, this interface provides an easy-to-use option which requires no additional hardware. Since the numbers are displayed on the pictures and the user indicates an answer by pressing a number key, incidental training is provided in number matching.

For persons who have good hand-eye coordination, the mouse can be used. You will probably find this interface method to be effective only for those persons who have specific language impairments in the presence of normal or near normal cognitive abilities.

The final direct selection option, TouchWindow, uses a touch sensitive screen for input. This interface option requires the use of a TouchWindow (available from Laureate) that mounts with velcro to your monitor. With this option, you simply touch the correct picture to enter a response.

Direct selection using the TouchWindow is the most intuitive interface option. The cognitive demands are less

than those required for the other interface options. It is the preferred input option for clients who have attentional problems as they can focus all their attention on the screen. For the youngster with a language learning disability and a concomitant attentional deficit disorder, this is the preferred interface option. Persons who have sustained brain injury may also find this the easiest interface method.

Generally speaking, if the client has the physical ability to use any of the direct select options, one of them should be chosen over Single Switch.

### **Single Switch**

This option is intended to be used by persons who lack the physical ability to use any of the direct selection alternatives. The concept of direct selection develops earlier than the concepts necessary to control a scanning device. For this reason we recommend the use of Single Switch only for those persons whose physical limitations are such that this input mode is required.

In the Single Switch mode, an indicator bar scans from one picture to the next and you use any key on the keyboard, the mouse buttons, the entire surface of the TouchWindow, or a single switch that emulates the keyboard to indicate a response.

When you select Single Switch as the interface option you must set the Scan Speed from the Parameters Menu. Scan Speed is the amount of time the indicator bar remains under a picture before moving. The scan speed can be changed from 1/2 to 10 seconds. Choose the speed that you think is most appropriate for your student. Remember that you can also adjust the speed with the up and down arrow keys while the program is running.

Regardless of the interface option you have chosen, you must decide on a Response Time. This refers to how long the program waits before cuing the answer or moving on to the next stimulus presentation. The program provides instructional feedback before moving on to the next stimulus item. You can choose from 1 to 10 seconds. You can also choose to have the program wait indefinitely by selecting “Infinite.” This is a useful setting if you want to provide additional live instruction prior to having the learner respond.

In the Single Switch mode, you are setting the number of times each position will be scanned (from 1 to 10 times) while the program waits for a response. If you choose “Infinite” the pictures are scanned indefinitely. This option is good for the user who may miss an answer because lack of muscle control interfered with the motoric execution of a response.

Once you have decided the interface and timing options for the lesson, you need to determine the instructional method. You can train on a single level or branch among levels.

## CHOOSING APPROPRIATE INSTRUCTIONAL PARAMETERS

*Words & Concepts* offers a number of instructional training options. Three different lesson parameters enable the instructor to tailor the lesson to meet the needs of a wide range of learners:

5. Change Training Level to End
6. Change # Correct to Advance
7. Change Criterion to End Lesson

You can train on any one of the three difficulty levels or you can opt to branch among levels. You can train using text, speech, or both. You also have the option of displaying noun names with the pictures. Pixel, an animated creature, can be turned on to provide additional reinforcement following correct responses. We'll discuss each of the instructional elements available in *Words & Concepts*.

The use of feedback is especially critical to the design of effective intervention programs. A number of Computer Assisted Instruction (CAI) studies have demonstrated that Knowledge of the Correct Response (KCR) is an effective instructional feedback technique (Gilman 1969; Anderson, Kulhavy, & Andre 1971; Tait, Hartley, & Anderson 1973; Wilson & Fox 1980, 1983). In KCR, the learner is always given the correct answer either through reinforcement or information feedback when incorrect. All of the levels of the six training units use KCR for instructional feedback. If an error is made, corrective feedback is provided before moving on to the next stimulus presentation. No response is treated as an error response. Correct responses are reinforced through verbal or printed feedback depending upon how the Voice and/or Text option was set. You can also turn animation on for reinforcement. When this option is turned on, an amusing character performs a variety of animated routines following correct responses. These animation routines are motivating to children. We've found most adults are entertained by the creature's antics as well, but if you don't think this form of reinforcement is appropriate, turn it off.

In all six training units, remediation follows the learner's first incorrect response to an item. All activities use the instructional technique referred to as Cuing of the Correct Response (CCR). Following an error response, a cue marker appears above the correct response. Further, the picture moves back and forth and changes colors. Second errors (or no response) are followed by KCR.

## TRAINING LEVELS

All of the activities (except categorization training) in *Words & Concepts* have three levels of training. These levels differ from each other by the nature of instructional support given prior to a request for a response.

The lowest training level provides both instruction and cuing before asking the learner to respond. Instruction is provided by having the program inform the learner of the correct response before a choice is requested. Additionally, when the stimulus pictures appear, a visual marker cues to the correct response.

On Level 2, the instructional information is given but the cue is dropped. Level 3 training uses no antecedent events. The student is presented with the stimulus pictures and asked to respond.

In the categorization activity, instruction is not provided on a stimulus presentation basis but the Review option serves as an instructional component. Two levels of training are available. The first provides cuing and the second, like Level 3 in the other training units, uses no antecedent event.

By choosing the Training Level to End and setting the number correct to advance to 0, you can provide continuous training on that level only. This feature is especially useful either for students who are in the beginning stages of learning the lexicon or for those who are perfecting their skills. For example, the person working with the Word Association unit for the first time might benefit from working on Level 1 only until a criterion of 16/20 is met. On the other hand, someone who is making only a small number of errors with minimal instructional support might enjoy the challenge of working exclusively on Level 3 where there are no antecedent events preceding stimulus presentation.

While working on a single level might be appropriate for some learners, others respond best to a lesson set up to branch among levels. When you are setting up a branching lesson, you first decide whether the last level to end will be two or three. You then decide how many correct responses the learner should make on a level before advancing to the next level. The lower the learner's abilities, the higher you should set the # Correct to Advance. If all three levels have been chosen for training, the program will automatically drop back from Level 2 to Level 1 if the learner makes three errors before making enough correct answers. When the learner is working on the level which has been set to end, the program will drop back as soon as enough errors have been made that criterion cannot be met in that set.

Setting Criterion to End Lesson means specifying the number of correct responses the student must make in the end level to finish training. The program will continue running until criterion is met or the program is interrupted.

The final training options are concerned with the presentation mode. You can choose to have the instructions, questions, and feedback spoken, printed, or both. For distractible non-readers, speech alone may be the best mode to choose. For these learners, the text on the screen may be distracting. For these learners you may also prefer to have the picture names turned off. On the other hand, with

adults with head injuries you may prefer to use *Words & Concepts* as a reading program. In this case, use the text option alone. In the Vocabulary unit, the noun name is presented in the question. If you have the picture name turned on in this activity, the person can respond correctly by matching the noun in the question with the noun on the picture. If you want the person to actually read the question and comprehend the noun, you must turn the picture name option off. This is especially important when you are doing Vocabulary Testing. If you leave the picture name on, the person need only match the words rather than actually read and comprehend the question.

For most learners you should use both speech and text. Similarly, you should turn the picture name option on as well. Remember that in Vocabulary testing and training, where the noun appears in the question, the user can respond correctly by matching the nouns.

With the variety of training and interface options you have to choose from in *Words & Concepts*, you can provide individualized tutorial instruction for a broad range of children and adults with disabilities.

### **REINFORCE LESSONS WITH CONCENTRATE! ON WORDS & CONCEPTS**

Lessons from *Words & Concepts* can be supplemented by playing with the *CONCENTRATE! On Words & Concepts* games. These games use the same vocabulary as the *Words & Concepts* programs and provide opportunities to improve visual and auditory memory as well as reinforce lexical skills. Game play, whether for one or two players, is simple and enjoyable. Students compete with themselves or others, trying to find pairs based on vocabulary, category, word identification by function, or word association. As with *Words & Concepts*, the Parameters Menu gives you the flexibility you need to use the programs with a wide range of persons with disabilities. You set the number of players, the type of interface each will be using, the number of boxes (6, 8, or 12), and the activity.

#### **Four Game Activities:**

##### *Vocabulary:*

With this activity you try to find pairs of identical pictures.

##### *Categories:*

Here you select pairs of pictures that belong to the same category.

##### *Function:*

You are verbally directed to find the picture that is used in a specific way.

##### *Association:*

With this activity you try to find pairs of pictures that “go together” or are commonly associated.

The *CONCENTRATE!* programs reinforce the lessons of *The Words & Concepts Series* in a fun game format. They strengthen vocabulary and word relationships while they exercise short-term memory. Use the programs in *The Words & Concepts Series* to provide intensive language instruction and combine them with the *CONCENTRATE! On Words & Concepts* programs for enjoyable game reinforcement activities.

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