

# LD ACCESS/AECOM MANUAL

## *A Practical Guide to*

### Using Technology with Learning Disabled Adults in Adult Literacy Programs



**A Handbook of Issues, Methods, and Software Evaluations**

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# Preface



**T**his manual is a joint venture of the LD ACCESS Foundation and the Adult Literacy Program of the Fisher Landau Center for the Treatment of Learning Disabilities at Albert Einstein College of Medicine (AECOM). The Adult Literacy Program is a unit of the Children's Evaluation and Rehabilitation Center (CERC) of AECOM.

## LD ACCESS Foundation

The LD ACCESS Foundation is one of the few organizations to focus solely on the post-secondary learning disabled adult population. The Foundation's mission is to protect the rights of learning disabled adults, to enhance their lives with research and technology, to ensure employment opportunities, and to advocate for their full participation in society. It was founded in 1996 in response to a backlash against learning disabled (LD) individuals nationwide and an immediate threat to accommodations received by LD students at Boston University. With support from LD ACCESS, several LD students mounted a class action suit against Boston University for its discriminatory practices. A Federal court decision in 1997 upheld their rights and created a legal model for future generations of learning disabled students. LD ACCESS also provided help in the litigation against the Educational Testing Service (ETS) for its practice of flagging tests administered with extended time, a common accommodation for LD students.

## The Adult Literacy Program at the Fisher Landau Center

The Adult Literacy Program at AECOM provides evaluations and treatment for adults who have learning problems that affect academic achievement, employment, social relationships, and mental health. Most of the adults seen for treatment have severe reading disabilities. Some cannot write more than their names and are ashamed and often despondent about their inability to read. These adults receive treatment in a one-to-one intervention setting by therapists who use intervention techniques appropriate for adults with learning disabilities. This includes a systematic phonics based approach to address their reading and spelling difficulties.

After a year of one-to-one intervention, during which they build their reading and writing skills as well as their self-confidence, small groups of adults meet twice a week in a computer laboratory to learn to use technology to further enhance their literacy skills and to improve their knowledge of the world. They are shown how to access the Internet and are introduced to text reading software that allows them to access information at any level of reading difficulty on the World Wide Web—not by reading, but by listening. The adults continue to receive group instruction in reading and decoding skills. Independently, they may practice with more difficult material using literacy based software programs and continue to hone their reading skills with exercises using material that is typed or scanned into the computer.

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# Acknowledgments



We sincerely thank

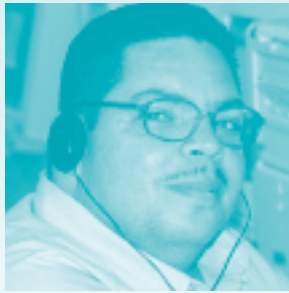
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## INTRODUCTION

**T**he purpose of this manual is to provide practitioners in the fields of adult literacy with practical information to help them devise and deliver literacy instruction for adults with learning disabilities that includes a technology component. The manual is geared toward teaching individuals who are reading at an elementary school level. The goal is to provide information that will benefit adults who are reading at low levels of literacy.

The evaluations of software and assistive technology in this manual are based on real-life observations of adults in literacy programs actually using the software and computer technology. When possible, the adults themselves provided evaluations of the programs or assistive devices based on their personal experiences.

Although assistive and instructional technology can be a productive and motivating addition to programs for low literacy adults with learning disabilities, they must be carefully integrated into the overall literacy program. Program participants cannot be expected to master the hardware and software components of assistive and instructional technology independently. They must be taught directly how to use the technology and be shown appropriate applications of its use.

### The manual is divided into five parts:

**PART ONE** sets the stage for our discussions about technology by introducing the characteristics

and needs of low literacy adults with learning disabilities (LD).

**PART TWO** describes important principles of instruction that help guide the development and implementation of a technology component for an adult literacy program.

**PART THREE** is devoted to the evaluation of computing skills and of software programs that teach literacy and literacy-related skills. A computer skills assessment survey helps in determining what an adult learner needs to know before starting to use a computer independently. A software evaluation form, based on principles of good instruction for LD students, is also provided. Sample evaluations will help in identifying programs that are useful to and usable by LD adult learners.

**PART FOUR** discusses different kinds of assistive technology and instructional technology that could benefit LD adults. It includes a description of a keyboarding instruction method designed specifically for LD individuals.

**PART FIVE** describes programs that have successfully integrated technology into literacy instruction.

**PART SIX** provides a brief introduction to the topic of ergonomics and suggestions to make computing more physically comfortable for users.



## PART ONE

# Characteristics of Adults with Learning Disabilities

One of the problems encountered when teaching adults with learning disabilities is the diverse set of symptoms they exhibit. Learning disabilities are lifelong disorders that can affect an individual's functioning in many ways and at many levels.

Individuals with learning disabilities may have characteristics that make it difficult for them to understand spoken language, to express their thoughts, to learn new information, to function independently in educational or vocational settings, and to take advantage of technological resources.

By definition, the adults we are focused on have severe reading and learning problems. Most of these adults have had some education—often in special education classes—but they were not always able to benefit from the experiences

offered to them. There is great diversity in the population of people affected by learning disabilities. No one individual will have all the signs, symptoms, or difficulties listed here. Each person will come to you with a unique set of abilities and challenges. An area that may be a weakness for one person may stand as a great strength for another. Again, no one individual will experience all of the problems associated with learning disabilities.

The speaking, reading, writing, spelling, memory, handwriting, and math problems that LD adults experience are rooted in information processing problems that affect learning. A learning disability can affect the learning process at any level—the reception of information through the senses, the processing of information in different areas of the brain, the storage of information, the retrieval of information, and/or the expression of information.

## Language-Related Difficulties

**Expressive language.** Difficulty working with the sounds of language (usually referred to as phonological processing deficits) is the key factor underlying reading disability. In addition to problems with reading and spelling, adults with language-based learning disabilities almost always have problems with oral language. These problems may be manifested when listening to spoken language (receptive language problems) or when using oral language to express ideas (expressive language problems). Adults with LD may have difficulties in word finding that make it hard for them to express themselves. Their spoken language may be dysfluent (choppy) and interrupted by pauses. Some may talk around the words they are looking for. Others may mispronounce words, as, for example, saying “pacific” for the word *specific* or “flustrated” for *frustrated*. Many learning disabled individuals overuse pronouns, making it difficult for others to understand what they are referring to. [See box below.]

### Expressive Language Problems

- **Word retrieval:**  
difficulty finding the right word at the right time; talking around the subject (circumlocution)
- **Mispronunciation of words:**  
“pacific” for specific  
“diclectic” for dyslexic  
“bandit” for Band-Aid
- **Confusion of similar sounding words:**  
“I have to repair dinner”
- **Transposition of words or syllables**  
“bog-mindling” for mind-boggling

**Pragmatics.** Some adults with learning disabilities have trouble with the practical parts of communication such as the give and take of

language in conversation and social interaction. They may have trouble understanding the appropriate way to enter into a conversation or the appropriate distance to keep from a conversational partner. Some LD adults may also have trouble understanding nuances in a person’s tone of voice and may not understand when someone is using sarcasm or expressing anger subtly.

**Memory.** Memory problems can make it hard for LD adults to learn and recall information. When auditory verbal memory is poor, adults may have difficulty remembering oral instructions and learning new vocabulary words or the rules of grammar. Tasks involving rote memory, such as memorizing math facts, will also be difficult. Learning the multiplication facts is a particularly difficult task for LD adults, as well as for LD children. Individuals with poor visual memory may have difficulties making mental pictures as they read, which might adversely affect their reading comprehension

### Associated Problems

**Motor Problems.** Although some individuals with learning disabilities have excellent motor abilities and are outstanding athletes or artists, some LD individuals have difficulty with motor coordination. Many have particular difficulty coordinating their fine motor movements. Consequently, they may have difficulty learning to type or learning to move the computer mouse efficiently.

**Attention Problems.** A large percentage of individuals with LD also have attention deficit/hyperactivity disorder (ADHD). Adults with attention problems may have difficulty sustaining their focus, especially when tasks are long or difficult for them. They need support and reminders to stay on task. Some LD adults may also have difficulty sitting still in their seats for long periods of time while on the computer. (*See Assistive Technology section for some suggestions.*)

**Visual-Spatial Problems.** Some LD individuals have difficulty understanding two and three-dimensional space and differentiating right from left. Difficulty with directionality might make it



hard to follow directions for using a computer or to find the cursor on the computer screen. Some adults might find it difficult to understand diagrams and pictures and/or to read maps. Visual-spatial problems might also affect the ability to align numbers correctly when doing math problems.

**Emotional Problems.** Most prominent in the profiles of learning disabled adults are feelings of inadequacy and poor self-esteem. Consequently, they need to work in a supportive and understanding learning environment. Many are humiliated by the problems they experience and struggle to keep them from other people, often including their spouses and children. They feel stupid and incompetent. Some are concerned that they have mental retardation. Most carry quite a bit of emotional baggage from their difficulties in school and often from being criticized and judged to be “lazy” or “stupid” at home as well.

**Many are depressed.** Some researchers feel that depression is ubiquitous in the population of learning disabled adults. Many adults stop trying hard to learn or succeed. They have what is known as “learned helplessness.” They feel they cannot control their own destinies and that no matter what they do, it will not turn out all right.

Many adults struggle to meet the challenge of learning something new. They are fearful of making mistakes and making themselves look “stupid” in front of others. Because of these fears, it is important to make LD students aware before-

hand of any class visits or observation by “outsiders” of their activities on computer programs. Explain the purpose of any visits and ask permission from individuals who might be observed directly by visitors.

### **Why use technology with LD individuals?**

Although at the present time, no technological device can take the place of a well-trained human being to provide initial instruction to an individual with a severe reading disability, technology can be a valuable adjunct to provide practice and reinforcement of instruction. A well-constructed computer program can allow a learning disabled individual to take charge of his/her learning and to practice new information at his/her own rate for as long as necessary or desired.

After some degree of basic literacy has been achieved, individuals can practice spelling and reading comprehension skills using a computer. At later stages, computer programs can be used to practice skills and subject matter in preparation for the general education diploma (GED). Individuals can go over material time and time again and use computer software to “read” words that may still be too difficult for them to read on their own.

At any stage or level of literacy development, adults with learning disabilities can gain access to local and worldwide newspapers and information about any topic on the Internet by using text reading software.



## PART TWO

# Principles of Effective Instruction for Adults with Learning Disabilities

There are six general principles of instruction that should be used when developing instructional methods and materials for adults with learning disabilities:

1. Provide direct instruction
2. Prevent overloading
3. Provide systematic, sequential instruction
4. Teach to mastery
5. Prevent forgetting through practice
6. Provide feedback

### 1. Provide Direct Instruction

People with learning disabilities are not good incidental learners. They need direct instruction that addresses the literacy, math, and daily living problems they experience. Adults who are reading at low levels need help to improve their basic reading skills. Basic reading skills include sight word knowledge (the ability to read words quickly by sight) and decoding (the ability to

figure out unfamiliar words using the sound and syllable structure of words). It is vital that adults with learning disabilities be provided with direct instruction in these basic skills.

### 2. Prevent Overloading

Adults with learning disabilities can be easily overloaded with new information. Overloading can affect a person's ability to learn new information and can disrupt previously learned information. Appropriately designed instruction helps to circumvent the problems of overloading and to compensate for the poor attention skills that many adults have.

Instruction that is designed to prevent overloading limits the amount of new information taught at one time. We need to think about how much new information is being presented. There is no rule of thumb for determining the amount of new information any given individual can absorb. Observations during teaching help to determine an appropriate amount for a particular person. It is

easy to tell when too much new information is being presented. People start to make mistakes while they are learning and may even make mistakes on things we thought they had mastered.

### 3. Provide Sequential Instruction

Just as with children, instruction for adults should not be haphazard. Don't wait for "teachable moments" when a person needs a specific skill or piece of information. Rather, make all moments teachable and sequence instruction so that people learn new things in a sensible way that provides a good basis for moving on to more sophisticated skills.

We need to present LD adults with instruction that is carefully sequenced to prevent gaps in their knowledge, to provide foundations for future learning, and to compensate for difficulties in integrating separate skills and in generalizing or abstracting information.

#### Prevent overloading in basic decoding instruction — Look for programs that:

- **Teach only one short vowel sound at a time.**
- **Consonants are usually easier to learn and may be introduced a few at a time.**
- **Do not introduce new short vowels until mastery is attained.**
- **Introduce rules for long vowels one at a time.**

### 4. Teach to Mastery

Adults with LD may forget new words or sounds they have been taught. This occurs in part because the words or sounds were not really mastered and information that is not mastered is readily forgotten. Each new skill that is taught should be practiced to a point of automatic mastery. An automatic response is one that the person does not have to stop and think about.

#### Look for programs that provide a good sequence for decoding instruction such as:

- **Letter names**
- **Consonant sounds**
- **Short vowels**
- **Consonant combinations (blends and digraphs)**
- **Long vowels (silent e, vowel digraphs)**
- **r-controlled vowels and vowel diphthongs**
- **Exceptions and more difficult sounds (e.g., soft g and c)**

Insuring that each new skill is learned to a point of automatic mastery helps compensate for problems in memory, attention, and discrimination. Keep in mind, though, that even when new concepts and new learning are "mastered" and well understood, they can—and will—be lost over time if they are not practiced and used. For example, most of us cannot remember the foreign language we learned in high school with the same degree of proficiency we displayed at that time if we have not used the language since graduation.

### 5. Prevent Forgetting through Practice and Repetition

"Use it or lose it!" This saying applies to most things in life, but it is of particular importance for individuals with learning disabilities. Two strategies need to be used to help learning disabled adults remember what they learn. First, provide a great deal of practice and repetition. Although some people moan at the thought of repetition, it is vital that LD adults get as much practice as possible. Practice and repetition don't have to be boring. It gives adults enormous enjoyment to read things they have mastered. And it is a teaching challenge to locate or prepare materials that allow for successful practice and eventual mastery.

## 6. Provide Informative Feedback

Once we understand that LD adults are not good “discovery” learners or incidental learners we can begin to understand their need for informative feedback. We can’t be reluctant to tell someone that they have read something incorrectly. Adults do not want to be patronized or told that anything

they do is just fine. They want to communicate with other adults as adults. But, we can’t just tell adults they are wrong and to please try again. We need to give them opportunities to correct their errors or to supply correct responses and give them the opportunity to practice the correct responses.

**Given their emotional sensitivity, it is important to provide feedback to learning disabled adults in a positive and constructive way.**

### **Avoid These...**

### **Try this feedback instead...**

“That's not right.”

“Try it this way.”

“That's wrong.”

“Make this change and it will be right.”

“You've made a mistake.”

“Here is another way of doing it.”

“That's not the right way.”

“My turn—I'll show you.”

“You have five words wrong.”

“You have 15 words correct.”

“We covered that already.”

“Let's go over that again.”

“Try to remember.”

“Let's go over that again.”



## PART THREE

# Computer Skills Assessment

**N**ever assume! It is vital that adult educators never assume knowledge without first assessing student competencies. Instructors need to determine whether students will require preliminary instruction before engaging in planned activities. Many adult literacy students have not had previous computer experience and lack the skills to perform even the most basic computer tasks such as turning the computer on and off. These students will experience great difficulty using instructional software or assistive technology if they do not first receive adequate preparation. When students have

mastered the basic skills, they can engage more fully in computer related activities. Instructors will be able to identify and bridge gaps in student knowledge by administering the following computer skills survey.

**Identify computer competence.** The Computer Skills Assessment Survey (on pages 13-15) was designed to assess the ability to engage in the most basic computer tasks. It examines knowledge of computing terms, the ability to identify and use computer components, keyboarding skills, and the ability to perform basic tasks.

### *Suggestions for using the survey*

- 1. Work with students individually.** This will minimize the influence of others in the classroom on student performance.
- 2. Be prepared to assist students who lack strong literacy skills.**
- 3. Attempt to elicit details when asking questions that require verbal answers only.** This is to make sure that students are not “faking it,” a strategy often used by LD adults to avoid embarrassment.
- 4. Observe how students approach tasks.** Do they appear anxious? Do they race through activities? Are they able to maintain focus and follow directions?
- 5. Pay close attention to students' ability to complete physical tasks with ease.** Are they able to manipulate the mouse? Can they use the keyboard with ease? Are they able to see the information on the computer screen?

The answers to these questions will better inform the instructor's decisions regarding whether students are prepared to use instructional software.

# COMPUTER SKILLS SURVEY

<b>Student owns or has access to a computer</b>	Owns <input type="checkbox"/>	Has access <input type="checkbox"/>	Approximate number of times used per week _____ times per week
<b>Student has own e-mail account</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Approximate number of times used per week _____ times per week

## ABLE TO IDENTIFY HARDWARE COMPONENTS, TURN THEM ON OR PREPARE THEM FOR USE:

*Point to each component and ask the student to identify it, turn it on (when applicable) and demonstrate how it is used.*

	Able to label	Able to use	No Knowledge
Monitor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mouse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer (CPU)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speakers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Headphones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microphone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## HAS USED A COMPUTER BEFORE TO:

*Student notes which activities and the approximate number of times he/she used a computer to engage in these activities.*

	Yes	No	# of times
Word process	<input type="checkbox"/>	<input type="checkbox"/>	_____
Play games	<input type="checkbox"/>	<input type="checkbox"/>	_____
Surf web	<input type="checkbox"/>	<input type="checkbox"/>	_____
E-mail	<input type="checkbox"/>	<input type="checkbox"/>	_____

## UNDERSTANDS WHAT IS MEANT BY AND HAS USED:

*Note what type of software (reading, math...) or assistive tech (screen readers, speech aides, speech recognition systems, large print word processors).*

	Has knowledge	Has used	# of times
Instructional software	<input type="checkbox"/>	<input type="checkbox"/>	_____
Assistive technology	<input type="checkbox"/>	<input type="checkbox"/>	_____

## UNDERSTANDS WHAT IS MEANT BY AND CAN USE MOUSE TO:

	Yes	No
Click	<input type="checkbox"/>	<input type="checkbox"/>
Double click	<input type="checkbox"/>	<input type="checkbox"/>
Scroll	<input type="checkbox"/>	<input type="checkbox"/>
Drag	<input type="checkbox"/>	<input type="checkbox"/>
Highlight	<input type="checkbox"/>	<input type="checkbox"/>

<b>UNDERSTANDS WHAT IS MEANT BY:</b> <i>Student explains these terms.</i>		
	Yes	No
Desktop	<input type="checkbox"/>	<input type="checkbox"/>
Icon	<input type="checkbox"/>	<input type="checkbox"/>
<b>CAN START AND SHUT DOWN THE COMPUTER</b>		
	Yes	No
Student demonstrates	<input type="checkbox"/>	<input type="checkbox"/>
<b>KNOWS CONVENTIONS FOR CURSOR USE:</b>		
	Yes	No
Arrow	<input type="checkbox"/>	<input type="checkbox"/>
Small hand	<input type="checkbox"/>	<input type="checkbox"/>
Flashing vertical	<input type="checkbox"/>	<input type="checkbox"/>
<b>ABLE TO LOCATE WITHIN A REASONABLE AMOUNT OF TIME:</b>		
	Yes	No
Letter keys	<input type="checkbox"/>	<input type="checkbox"/>
Enter key	<input type="checkbox"/>	<input type="checkbox"/>
Spacebar	<input type="checkbox"/>	<input type="checkbox"/>
Backspace key	<input type="checkbox"/>	<input type="checkbox"/>
Tab key	<input type="checkbox"/>	<input type="checkbox"/>
Shift key	<input type="checkbox"/>	<input type="checkbox"/>
Uses correct finger positions	<input type="checkbox"/>	<input type="checkbox"/>
<b>KNOWS HOW AND WHY TO USE THE FOLLOWING KEYS:</b>		
	Yes	No
Enter key	<input type="checkbox"/>	<input type="checkbox"/>
Spacebar	<input type="checkbox"/>	<input type="checkbox"/>
Backspace key	<input type="checkbox"/>	<input type="checkbox"/>
Tab key	<input type="checkbox"/>	<input type="checkbox"/>
Shift key	<input type="checkbox"/>	<input type="checkbox"/>
<b>KNOWS PRINTER BASICS</b> <i>Student should be able to demonstrate each task.</i>		
	Yes	No
Turn on	<input type="checkbox"/>	<input type="checkbox"/>
Add paper	<input type="checkbox"/>	<input type="checkbox"/>
<b>UNDERSTANDS PURPOSE OF:</b>		
	Yes	No
Floppy disk	<input type="checkbox"/>	<input type="checkbox"/>
CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>
<b>ABLE TO INSERT AND EJECT</b>		
	Yes	No
Floppy disk	<input type="checkbox"/>	<input type="checkbox"/>
CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>

**ABLE TO SAVE FILES TO DIFFERENT STORAGE DEVICES:**

*Student saves a selected document to the target storage devices.*

	Yes	No
Hard drive	<input type="checkbox"/>	<input type="checkbox"/>
Floppy drive	<input type="checkbox"/>	<input type="checkbox"/>
Zip drive	<input type="checkbox"/>	<input type="checkbox"/>

**ABLE TO LAUNCH APPLICATIONS FROM:**

*Student demonstrates ability to launch applications*

	Yes	No
Desktop	<input type="checkbox"/>	<input type="checkbox"/>
Disk drive	<input type="checkbox"/>	<input type="checkbox"/>
CD-ROM	<input type="checkbox"/>	<input type="checkbox"/>





## Guiding Principles for Software Evaluation

It is important to synchronize instruction and computer work. In order to achieve this, the same instructional principles should be considered when determining the utility of a software program as when determining the strength of an intervention program. The decision to use a particular software program should be based upon whether the program adheres to our basic principles of instruction for LD students:

1. Provide direct instruction
2. Prevent overloading
3. Provide systematic, sequential instruction
4. Teach to mastery
5. Prevent forgetting through practice
6. Provide immediate, corrective feedback

In addition to the above principles, there are other factors that should be considered. The software evaluations are organized around the following concerns.

**Does software meet the purposes of the literacy program?** When evaluating a software program, it is necessary to determine whether it is compatible with the literacy program's instructional objectives. The software may not adhere to the same educational philosophy as the literacy program. This disparity will likely be reflected in the types of activities offered by the software. If major differences exist, then the use of the software may be counterproductive and not only fail to benefit the students, but also frustrate and confuse them. If differences are slight, then it might only be necessary for the instructor to prepare the adults beforehand. For example, if the software program uses different keywords for vowel and/or consonant sounds, experienced

students could be introduced to the new keywords, but the instructor might decide not to use the program for beginning students. If the software program follows a completely different sequence of instruction or has totally unfamiliar material, it will not meet the purposes of the literacy program.

**What literacy skills are required to follow directions and use the program?** It is vital that instructors are aware of the level of literacy skills needed to use a program. It is not uncommon to find a program marketed for students reading at a first grade level that requires the reading of directions or text that is far too difficult for the target population. If such a program does not include an audio narration component, then it will likely be of very little use to students reading at low literacy levels.

**Is the software appropriate for adult use?** Most adult students with LD have had a significant number of negative experiences throughout their educational histories. Practitioners must not add to these experiences by introducing software that is or may be interpreted as “babyish.” Although some students may be less sensitive to the incorporation of cartoon images or stories with immature themes, others may find these features distracting as well as offensive.

**Does student have to complete the lesson in one sitting?** Since computer time is usually limited, students are often unable to complete entire lessons in one sitting. If the program does not bookmark where students leave off, they will be forced to repeat the entire lesson the next time they use the program. This may make the program tedious and progression through program lessons slow.

**Does student gain a sense of accomplishment from program?** Again, students should be able to make a smooth transition from working with an instructor in the classroom to working independently at the computer. If software is selected properly, students should feel a sense of satisfaction and accomplishment when working on the computer.

**What computer skills are required?** It is also important to be aware of the computer skills that students must possess in order to be able to use a program. This will enable instructors to determine whether their students have the computer skills to meet task demands, or whether they will require preliminary computer instruction. It also enables instructors to determine whether or not accommodations can be made for those students who are unable to meet task demands. At times there may be simple solutions, such as replacing the mouse with a trackball for students who do not possess the motor skills required to manipulate the mouse. There are other situations, however, that may not be as easily resolved. For instance, students who are unable to type or only able to type on the hunt and peck level will likely become frustrated when using a program that requires a significant amount of typing. The Computer Skills Assessment Survey (pages 13-15) will help in evaluating the students’ computer skills.

**Sample the software program if you can!** Many software publishers provide samples for those who express interest in purchasing their product, and it is highly recommended that those practitioners who select software view these samples carefully prior to making any purchases.

### **The format of the software evaluations**

The software program evaluations are presented in a table format that addresses the following questions and program characteristics.

- What is the purpose of the program?
- What ages and literacy levels is the software designed for?
- What literacy, writing, or math skills are addressed?
- General overview of how the program works
- Description of program components
- Hardware accessory requirements
- What computer skills are needed?

- Does the program bookmark where a student exits the program? (that is, can the student mark her place and return later to where she left off?)
- Is the content and presentation of the material appropriate for adults?
- Are the program's visual components relevant and appropriate for adults?
- Does the program require literacy skills for its use?
- Does the program prevent overloading by presenting small amounts of new information at a time?
- Does the program make clear its learning objectives and focus on what is to be learned or practiced?
- Does the program allow for practice to mastery?
- Does the program provide for immediate corrective feedback?
- Does the program provide for practice and repetition?
- Are there program benefits for the LD adult?
- Are there special challenges for the LD adult?



## Sample Software Evaluations

These software evaluations are samples that help to highlight the software evaluation process. The form on pages 55 and 56 can be used to guide that process.

The software program evaluations are presented in six groups according to the type and level of instruction they provide. The first group focuses on basic decoding skills, the second, third, and fourth groups focus on increasingly higher levels of reading comprehension, and the fifth group consists of programs geared toward GED preparation. The last group consists of a comprehension and spelling program in a game-like format.

### **GROUP 1. (pages 21-32)**

This group of software evaluations features programs that focus on the initial teaching of letter/sound associations and/or practice of basic decoding and/or spelling skills.

*The Alphabet-International Version*

*Ultimate Phonics Reading Program*

*Reading SOS (Strategies for Older Students)*

*Omti-Rogers Multisensory Reading, Spelling and Penmanship Program*

*Phonics Alive! 2- The Sound Blender*

### **GROUP 2. (pages 33-37)**

The second group features software programs that are slightly more advanced than those in the first group. They focus on the application of basic skills through story reading and vocabulary development.

*Contemporary's Reading for Adults*

*Contemporary's New Reader Bookstore*

### **GROUP 3. (pages 38-45)**

The third group focuses on reading comprehension development.

*Real Achievement Solutions: Diascriptive Reading I-IV*

*Real Achievement Solutions: Dilemma*

*Real Achievement Solutions: How to Read for Everyday Living*

### **GROUP 4. (pages 46-48)**

The fourth group features one program that focuses on advanced comprehension and study skills.

*Guides Reading and Study Skills*

### **GROUP 5. (pages 49-54)**

This group consists of programs that focus on content areas that are included in the GED test. They provide instruction in more advanced areas of comprehension, vocabulary, grammar, social studies, science, and math.

*Contemporary's Pre-GED.*


*MHC Interactive: Contemporary's GED*

### **FORM (page 55-56)**

*Sample Software Evaluation Form*

## GROUP 1. INITIAL TEACHING OF BASIC LITERACY: LETTER SOUNDS, DECODING, SPELLING

**Name:** The Alphabet-International Version  
**Publisher:** Protea Textware Pty. Ltd  
**Copyright:** 1995-2000  
**System used:** Windows  
**Age group:** Designed for adults, but suitable for children over five years of age



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

### What ages and literacy levels is the software designed for?

Designed for adults, but suitable for beginning readers of all ages.

### What skills are addressed?

Letter names, letter/sound association learning, upper and lower case letter identification, alphabet learning, and spelling from memory.

### General overview of the program:

The program has five sections—three focus on letter name and letter/sound identification; one focuses on typing the alphabet (hunt and peck level), and one that focuses on spelling from memory. Most activities require basic mouse skills such as clicking and dragging.

### Description of program components:

**Small Letters:** Students are introduced to names and corresponding sounds of lowercase letters. Students listen to letter sounds and identify letters, then place them in alphabetical order.

**Capital Letters:** Same activities as small letters, but with uppercase letters.

Note: Keywords for capital letters are different from those used for small letters.

**Capital and Small Letters:** Reintroduces letter names and requires users to match uppercase letters with their lowercase counterparts and vice-versa.

**Using the Keyboard:** Students are required to type target letters.

**Spelling:** Activities require students to spell target words, supply missing letters within words, choose the name of a picture from a selection of four words, and spell the names of pictures. If a student does not know how to spell a word, the program tells the student which key to type.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speakers (optional)
- Trackball
- Printer

**Computer skills needed:** Mouse clicking & dragging. Hunt & peck keyboard skills.

**Does the program bookmark where a student exits the program?** No.

**Is the material age appropriate?**

The visual presentation of material is mature. In many instances real pictures, rather than cartoons, are used to illustrate keywords.

**Are the program's graphics relevant?** Yes, all are relevant to tasks.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?**

Yes. It presents reasonable amounts of information with relatively short activities.

**Does the program make clear its objectives and provide focus on new learning?**

Although learning objectives are not explicitly stated, the focus is clear.

**Does the program allow for practice to mastery?**

Users are able to repeat activities. Spelling activities require students to provide the correct answers before proceeding.

**Does the program provide for immediate corrective feedback?**

Yes. For example, one activity requires user to listen to sounds and click on the corresponding letter. If user selects the incorrect letter, the correct letter is visually highlighted.

**Does the program provide for practice and repetition?**

No, but activities are short and students can get additional practice by repeating activities.

**Program benefits for the adult with LD?**

LD adults will likely benefit from the self-paced nature of program activities. Beginning readers will also benefit by using the program to reinforce their knowledge of letter/sound correspondences. Keyboard practice will also help students to develop their typing skills.

**Special challenges for the adult with LD?**

The program's spelling component does not provide any instruction in segmenting and blending sounds into words. Therefore, the spelling component should be used only as a practice tool for spelling sight words.



## GROUP 1. INITIAL TEACHING OF BASIC LITERACY: LETTER SOUNDS, DECODING, SPELLING

**Name:** Ultimate Phonics Reading Program  
**Publisher:** Spencer Learning  
**Copyright:** 1996-1998  
**System used:** Windows  
**Age group:** Beginning readers of any age.



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

### What ages and literacy levels is the software designed for?

Appropriate for adults and beginning readers of any age.

### What skills are addressed?

Letter-sound correspondences, decoding, and sight word reading.

### General overview of the program:

All material in the program, which is organized into 262 lessons, is introduced sequentially. First, letter sounds are introduced in isolation, then within the context of words, then in sentences. All common irregular words are introduced as sight words. Users need only to click the mouse to hear word and sentence pronunciations. Although this is a “self-teaching” program, instructors are advised to listen to students read all word and sentence lists to ensure that they have mastered all ideas and patterns.

### Description of program components:

**Idea/Pattern:** The theme of the lesson is introduced on this lesson page. Users are instructed in letter(s) pronunciations or syllable concepts (silent-e, suffixes).

**Sight Words:** Common sight words are introduced.

**Word List:** Users view a list of words that contain either the target sound or illustrate the target concept that was previously introduced in the Idea/Pattern page.

**Words:** These lessons break down words into their phonic components.

**Sentences:** Students are required to read previously learned words within the context of sentences.

### Hardware accessory requirements:

- Mouse
- Microphone
- Headphones
- Speaker
- Trackball
- Printer

**Computer skills needed:** Use of mouse.

**Does the program bookmark where a student exits the program?** Yes.

**Is the material age appropriate?** It is appropriate for students of all ages. All material is presented in a straightforward style that does not include extraneous graphics or sound.

**Are the program graphics relevant?** Yes. They highlight target concepts.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Yes. All information is presented incrementally to avoid overloading.

**Does the program make clear its objectives and provide focus on new learning?** Yes. Learning objectives are made clear through verbal instructions.

**Does the program allow for practice to mastery?**

Activities are not interactive and users are only required to read the screen. The only means of gauging mastery is by having instructors listen as users read word and sentence lists. If a level of mastery is not reached, there are no supplemental activities provided; therefore, additional practice can only be attained through lesson repetition.

**Does the program provide for immediate corrective feedback?** No. The lessons are not interactive. Student performance can be judged only by having instructor listen to student read words and sentences.

**Does the program provide for practice and repetition?**

Again, student progress can only be gauged by listening to the student read the word and sentence lists. If a student requires additional practice, the student may repeat a lesson.

**Program benefits for the adult with LD?**

Adults with LD will likely benefit from the systematic and sequential presentation of material.

**Special challenges for the adult with LD?**

As previously noted, program activities are not interactive. The program assumes that students will learn by reading.

## GROUP 1. INITIAL TEACHING OF BASIC LITERACY: LETTER SOUNDS, DECODING, SPELLING

**Name:** Reading SOS (Strategies for Older Students)  
**Publisher:** Lexia Learning Systems, Inc.  
**Copyright:** 1994/1999  
**System used:** Mac or Windows  
**Age group:** Nine+



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** Grade four through adult.

**What skills are addressed?** Application of word attack (decoding) strategies from sounds to single words to contextual materials.

### General overview of the program:

An individual student is placed in a program level, based on performance on a supplied reading test or through teacher evaluation. At each level, demonstrations and instructions are given, and the student responds usually by clicking the mouse. Activities branch automatically, depending on whether or not the student demonstrates mastery of the skill(s) being practiced.

### Description of program components:

- Level 1:** Focuses on short vowels and consonants.
- Level 2:** Activities involve changing individual letters within words to make new words, distinguishing between closed and silent-e syllable words, and combining syllables to make words.
- Level 3:** Activities involve reading and manipulating vowel digraphs, r-controlled words, polysyllabic words, and suffixes.
- Level 4:** Activities involve identifying open and closed syllable words and matching syllables to make new words.
- Level 5:** Activities focus on the understanding and use of prefixes and suffixes.

### Hardware accessory requirements:

- Mouse
- Microphone
- Headphones
- Speaker (optional)
- Trackball (optional)
- Printer (optional)

**Computer skills needed:** Use of mouse. Use of keyboard (hunt and peck).

**Does the program bookmark where a student exits the program?** Yes.

**Is the material age appropriate?** Yes. A limited number of cartoons are used in the initial exercises to illustrate keywords.

**Are the program graphics relevant?** Yes. Graphics serve to aid the user's understanding of instructional material.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Yes. A reasonable amount of information is presented in each lesson. It is assumed that the information has already been taught and that Reading SOS is being used for practice. It does not move on to more difficult skills until mastery is demonstrated at each level.

**Does the program make clear its objectives and provide focus on new learning?** Yes. They are made clear through the verbal instructions provided and the graphics used.

**Does the program allow for practice to mastery?** Yes. Provides a great deal of practice and does not move on until mastery is demonstrated.

**Does the program provide for immediate corrective feedback?** Yes.

**Does the program provide for practice and repetition?** Yes. The program is a patient teacher that allows for a tremendous amount of practice and repetition.

**Program benefits for the adult with LD?**

The program is close to ideal for adults with LD. It provides sufficient opportunities for practice and repetition, enables students to practice to mastery, and prevents overloading by presenting a reasonable amount of information within the framework of a single lesson.

**Special challenges for the adult with LD?**

Timed activities are the biggest challenge. Some adults (especially older adults) may have trouble responding quickly enough. The time components cannot be changed. Use of a trackball rather than a mouse may help some adults.

## GROUP 1. INITIAL TEACHING OF BASIC LITERACY: LETTER SOUNDS, DECODING, SPELLING

**Name:** Omti-Rogers Multisensory Reading, Spelling and Penmanship Program  
**Publisher:** The Rogers Center for Learning  
**Copyright:** 1996  
**System used:** Windows/Mac  
**Age group:** Children and adults

### What is the purpose of the software?

- Initial teaching of skills or strategies.
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** For students of any age who have difficulty acquiring basic literacy skills. The publishers note that it may be particularly useful for students with LD or ADD/HD.

**What skills are addressed?** The program addresses reading, writing and spelling skills that are required to function competently on the sixth grade level. The program requires the application of decoding strategies from sounds to single words to contextual material.

### General overview of the program:

This program is based on the Orton-Gillingham multisensory instructional model.

All activities are cumulative and sequential. The program begins by addressing the most basic skills—identification of sound-symbol associations—and progresses to more advanced tasks, i.e., reading of multi-paragraph texts. All activities are interactive and self-paced. Students are encouraged to practice all previously introduced skills to mastery before proceeding to new skills. All program activities require that students respond by clicking the mouse.

### Description of program components:

**Letters:** Students are presented with a letter, sound and keyword. They are required to “feel” the letter by tracing it on the screen. They then write the letter on a sheet of paper.

**Reading:** The continuum of reading activities progresses from basic decoding of words to word, sentence, and paragraph reading.

Initial activities are designed to develop the student’s association between sounds and symbols. The student clicks on individual letters to hear corresponding keywords and sounds. These sounds are later blended to form words.

The student then advances to sentence and paragraph reading. The student listens to audio-narration while simultaneously tracking the print. Advanced activities require the student to read paragraphs.

**Spelling:** Spelling activities require the student to listen as target words are pronounced sound-by-sound. As each sound is pronounced in isolation, the student must click on the corresponding letter.

**Writing:** The student begins by tracing letters and then writing the letters on a separate sheet of paper. In later writing activities the tracing component is eliminated, and the student is required to simply copy words onto a separate sheet of paper.

**Language:** These activities introduce the student to language concepts including, affix and syllabication rules. All activities include either/both a reading and spelling activity.

**Dictionary:** The student is introduced to dictionary pronunciation symbols. The student is then instructed on how to use the symbols when reading exception words. Dictionary instruction also includes reading and spelling activities.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speaker (optional)
- Trackball
- Printer

**Computer skills needed:** Use of mouse.

**Does the program bookmark where a student exits the program?** Yes. The program bookmarks where a student exits an activity. Only if a student exits during a “letter review” is he returned to the beginning of an activity.

**Is the material age appropriate?** Yes. Cartoons are used minimally to illustrate key points.

**Are the program graphics relevant?** Yes. Graphics serve to illustrate and enhance material being introduced.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Yes. The program introduces a very reasonable amount of information within the framework of a single lesson.

**Does the program make clear its objectives and provide focus on new learning?** Yes. Program objectives and the focus of activities are made clear through narrated instructions.

**Does the program allow for practice to mastery?** If students do not reach a level of mastery, they are encouraged to repeat the lesson. They are not, however, required to reach a level of mastery before continuing on to the next lesson.

**Does the program provide for immediate corrective feedback?** Yes. The program notifies students if their responses are inaccurate. The correct answer is not provided. Students are encouraged to keep trying until they answer correctly.

**Does the program provide for practice and repetition?** Yes. Students are able to repeat activities as many times as they wish. They are encouraged to practice to mastery.

**Program benefits for the adult with LD?**

This program is ideal for adults with reading disabilities. Activities are short enough to maintain interest, yet, as previously noted, students may continue to practice to mastery. The presentation of instructional material provides students the opportunity to master fundamental skills before progressing to more advanced tasks.

**Special challenges for the adult with LD?**

Lack of familiarity with the computer may influence the student's success. It might be beneficial for the student if the class instructor conducted initial teaching of skills and concepts.

## GROUP 1. INITIAL TEACHING OF BASIC LITERACY: LETTER SOUNDS, DECODING, SPELLING

**Name:** Phonics Alive! 2 – The Sound Blender  
**Publisher:** Advanced Software Pty Ltd.  
**Copyright:** 1998  
**System used:** Windows/Mac  
**Age group:** Ages six through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** For students of all ages who have mastered single letter-sound correspondence.

**What skills are addressed?** Word attack skills: decoding, encoding and blending activities. Students are introduced to all syllable types, most digraphs and diphthongs.

### General overview of the program:

The program includes twelve units that address syllable patterns, diphthongs, digraphs, controlled-r and long vowel sounds. Each unit takes about fifteen minutes to complete, although all activities are self-paced. Units consist of an introduction, rhyming exercises, blending exercises and a keyboard/spelling exercise. Most activities require students to simply click the mouse, although the keyboarding activity requires that students type words in isolation. All directions and instructions are narrated.

### Description of program components:

**Introduction:** These activities typically require students to click on the individual phonemes within words.

**Rhyming:** These activities require students to sort various word endings into the correct rhyming categories.

**Blending:** Students listen to letters pronounced in isolation. They are then asked to blend those letters and identify the word. They then click on the picture that the word represents.

**Spelling/Keyboarding:** Students look at a word for a few seconds. They are then asked to type the word from memory. This activity is timed.

### Hardware accessory requirements:

- Mouse
- Speaker
- Microphone
- Trackball
- Headphones
- Printer (optional)



**Computer skills needed:** Use of a mouse. Use of a keyboard (hunt and peck level).

**Does the program bookmark where a student exits the program?** No. If a student exits during a program, he/she must begin the unit again.

**Is the material age appropriate?**

Adults may find the program to be too “child-friendly” due to its use of cartoon images.

**Are the program graphics relevant?** Users may find that the graphics detract from the program’s educational intentions.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Although activities are brief in duration, multiple concepts are often introduced in a single unit, which may lead to overload. For example, in a single unit students are required to blend words with long /a/ and /e/ vowel sounds using the spellings: ai, ay, a-e, ee, ea, and e-e.

**Does program make clear its objectives and provide focus on new learning?** Yes. Oral instructions make objectives clear.

**Does the program allow for practice to mastery?** No. Students who perform at frustration level are permitted to advance to new units.

**Does the program provide for immediate corrective feedback?** No. Although the program indicates when a response is inaccurate, it does not provide corrective feedback.

**Does the program provide for practice and repetition?** No. Supplemental practice activities are not provided to strengthen students’ areas of weakness.

**Program benefits for adults with LD?** LD adults may benefit from the self-paced nature of the majority of activities. In addition, all directions are narrated so that students with limited literacy skills may engage in activities.

**Special challenges for adults with LD?** Although the program addresses fundamental decoding skills, it may not provide adequate opportunities for practice and repetition. Due to limited practice, many adults may not fully benefit from the program. Many may require additional time to complete timed tasks; therefore, they may struggle with the timed program activities.

## GROUP 2. STORY READING AND VOCABULARY DEVELOPMENT

**Name:** Contemporary's Reading for Adults  
**Publisher:** McGrawHill Contemporary  
**Copyright:** 2000  
**System used:** Windows/Mac  
**Age group:** Adults



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

### What ages and literacy levels is the software designed for?

This program is designed for students whose reading levels range from 0.5 to 2.9.

**What skills are addressed?** Letter sounds, word recognition, comprehension, and writing skills.

**General overview of the program:** Program includes five components: guided reading, writing, letter pronunciation, sight word reading and word identification. All directions are narrated. Most activities require students to respond by clicking the mouse. Typing is required for the writing activities.

### Description of program components:

**Reading:** The program includes fifteen “books.” If users are unable to read the stories independently, they may select the word-for-word digital audio narration option. Users may listen to story narration an unlimited number of times and may also click on target words (highlighted by an asterisk) to hear pronunciations and definitions.

**Writing:** These activities are presented in a split screen format. On the left-hand side of the screen, users are presented with an illustration from one of the stories. On the right-hand side, they are given a writing prompt in the form of a question. Users are instructed to view the picture, read/listen to the question and write a response.

**Words:** This section comprises four narrated activities. In the “Letter Sounds” activity users listen to the pronunciation of target letters in isolation and within the context of key words. In the “Sight Words” section users select a word from a list by clicking the mouse. They are then given the name of the word and a sentence that contains the target word. Users may then complete three activities in which they are asked to identify and type the target word. “Story Words” is a glossary of words taken from the readings. Users select words and listen to how they are pronounced and used in sentences.

In “My Words,” users create their own glossaries by typing selected words, their own definitions of those words, and sentences containing the words.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speaker (optional)
- Trackball
- Printer (optional)

**Computer skills needed:** Use of mouse; click and drag. Use of keyboard. Keyboarding skills (for writing component only). Printing (optional).

**Does the program bookmark where a student exits the program?** No. If a user reenters a program, he/she must start at the beginning of a selected activity.

**Is the material age appropriate?** Yes. Story content and activities are mature and designed for students with adult interests. However, illustrations that accompany some of the stories may be considered too childish.

**Are the program graphics relevant?** Yes. Illustrations are relevant to the text.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Yes. The program prevents overloading by presenting reasonable amounts of information within each section.

**Does the program make clear objectives and provide focus on new learning?** Yes. Objectives are made clear through verbal instructions. Activities remain focused on what is to be learned.

**Does the program allow for practice to mastery?** With the exception of the sight word spelling activity, students are not required to work to mastery.

**Does the program provide for immediate corrective feedback?** The program notes if an answer is inaccurate and encourages students to try again.

**Does the program provide for practice and repetition?**

Not all program activities are interactive. In a number of program activities such as “Letter Sounds” and “Story Words” students simply listen to/read informational material.

**Program benefits for the adult with LD?**

Due to the program's word-for-word narration option, adults with limited literacy proficiency are able to engage in the program's independent reading activities.

**Special challenges for the adult with LD?**

The program would be more effective for LD students if all activities were interactive. For instance, students would be more likely to retain their knowledge of "Story Words" if they were provided the opportunity to use the words in addition to reading the definitions.

The "My Words" activity may also present additional challenges by requiring users to recall selected words and their definitions. Students may not have the memory skills to benefit from this activity.

## GROUP 2. STORY READING AND VOCABULARY DEVELOPMENT

**Name:** Contemporary's New Reader Bookstore  
**Publisher:** McGraw Hill Contemporary  
**Copyright:** 2000  
**System used:** Windows/Mac  
**Age group:** Adults



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** The program is designed for adults who are pre-readers and for those who are reading between a first and third grade level.

**What skills are addressed?** Basic consonant sounds, word families, word attack and vocabulary skills.

### General overview of the program:

The program is designed to help readers learn consonant sounds and expand their vocabulary knowledge. Upon entering the program, users may elect to work with one of twenty “books” or the “Must Know Words” glossary. Students who select a “book” option advance through a series of chapters, which include both reading and phonics activities. Students who choose to work in the “Must Know Words” glossary engage in a variety of activities designed to increase target word knowledge. All written instructions and directions are accompanied by audio narration. Most activities require students to point and click the mouse. Some require users to type a single word.

### Description of program components:

**Books:** Each book consists of fourteen chapters and follows a structured format. In the initial three chapters, individual consonant pronunciations are introduced within the context of words in stories. In chapters four through eight, consonant pronunciations are reviewed within the context of words in isolation. In the ninth chapter of each “book,” students review the target consonant and all previously studied letters. Chapters ten through twelve focus on the development of word attack skills through work with word families. In the thirteenth chapter of each “book” students practice using “Must Know Words” in the story. “Must Know Words” are considered to be the most commonly used words in the English language. Every “book” concludes with a story review.

**Must Know Words:** The user selects a target word and is given the pronunciation of the word in isolation and within the context of a sentence. Activities include selecting a target word from among a group of twelve words and typing/spelling the target word.

**Hardware accessory requirements:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mouse                 | <input checked="" type="checkbox"/> Speakers (optional) |
| <input type="checkbox"/> Microphone                       | <input type="checkbox"/> Trackball                      |
| <input checked="" type="checkbox"/> Headphones (optional) | <input type="checkbox"/> Printer                        |

**Computer skills needed:** Use of a mouse. Use of a keyboard (hunt and peck level).

**Does the program bookmark where a student exits the program?** No.

**Is the material age appropriate?** Yes.

**Are the program graphics relevant?** Yes. Graphics are relevant and mature. Illustrations enhance the student's understanding of story content.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Yes. The program provides a very reasonable amount of information within the framework of one lesson.

**Does the program make clear its objectives and provide focus on new learning?** Yes. Learning objectives are made clear through audio recordings and focus is apparent throughout the lessons.

**Does the program allow for practice to mastery?** No. Students do not have to master a skill before moving on, but they are given opportunities to practice target skills.

**Does the program provide for immediate corrective feedback?** Yes. While some activities just note whether a response is incorrect, other activities also provide the correct answer.

**Does the program provide for practice and repetition?** No. All activities are brief.

**Program benefits for the adult with LD?** All activities are self-paced. Adult learners who require additional time on task will likely benefit from this feature.

**Special challenges for the adult with LD?** Insufficient practice and repetition of target skills. Also, the digital voice closes some consonant pronunciations with a vowel sound (for example, "m" is "muh.") Students who pronounce consonants this way may experience difficulty blending sounds into words in the future.

## GROUP 3. READING COMPREHENSION DEVELOPMENT

**Name:** Real Achievement Solutions: Diascriptive Reading I-IV  
**Publisher:** Educational Activities Software  
**Copyright:** 2001  
**System used:** Mac or Windows  
**Age group:** grade 3 through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the material designed for?** Students grade 3 and above, as well as adult beginners and remedial readers.

**What skills are addressed?** Literal and inferential comprehension skills.

### General overview of the program:

There are four Diascriptive Reading programs, which are designed for students whose reading comprehension levels range from grades 1.5-12. Each program begins with a fourteen-question skills assessment, and students are placed in a program level based on their assessment performance. Each level provides practice in the following areas: locating details and main ideas, inferencing, sequencing and vocabulary. Diascriptive Reading II also includes a section that requires students to distinguish fact from opinion. All level activities consist of sixteen questions. Students must maintain a score of sixty-nine percent in order to advance to the next level. Upon responding incorrectly to thirty-two percent of the questions, students are automatically transferred to a lower level.

### Description of program components:

**Details:** The details section requires students to read passages, tables, and graphs. Students then answer multiple-choice questions that focus on specific details found in the readings.

**Inference:** Activities in this section are presented in multiple-choice format. Students are required to identify the main idea of passages and paragraphs. Students are also asked to select appropriate passage titles.

**Sequence:** Sequencing activities require students to read passages, and, based on the readings, fill-in blanks with words that make sentences sequentially accurate.

**Fact and Opinion (Diascriptive Reading II only):** Students read passages and determine whether statements within the passages are facts or opinions.

**Vocabulary:** Using context, students select the antonyms/synonyms of target words. Vocabulary activities also include cloze exercises, which require students to select the words that best complete sentences.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones
- Speaker
- Trackball
- Printer

**Computer skills needed:** Use of mouse. Use of keyboard (hunt and peck).

**Does the program bookmark where a student exits the program?** Yes. Students are automatically returned to where they left off during the previous session.

**Is the material age appropriate?** Yes. Content is appropriate for adult students.

**Are the program graphics relevant?** Yes. Program graphics are relevant and serve to illustrate material presented in the text.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** If the program is used for practice and reinforcement of previously taught skills and strategies, the information presented in the program should not be new to students. Students may, however, find the duration of the sixteen question practice activities to be too long.

**Does the program make clear its objectives and provide focus on new learning?** Yes. Sections begin with an explanation of the target skill.

**Does the program allow for practice to mastery?** No. Students are not required to master activities before they advance to the next level. They may advance if they answer sixty-nine percent of the questions accurately.

**Does the program provide for immediate corrective feedback?** Yes. Students are notified of errors. If the student does not respond correctly on the second attempt, the program provides the correct answer. No explanation is provided.

**Does the program provide for practice and repetition?** Yes. The duration of activities does provide ample time for practice. Students may also repeat levels.



**Program benefits for the adult with LD?** The program provides a great amount of practice for those students seeking to develop their comprehension skills and build their vocabulary knowledge. The self-paced nature of the program will likely benefit students who require additional time on task.

**Special challenges for the adult with LD?** Although some higher-level readers may benefit from the program, adult students reading between a 1.5 and 5th grade level will likely experience difficulties decoding the program's text. Most program activities, even at the lowest levels, require that users read a significant amount of text, which is written at a level that is too advanced for many adult literacy students. Many activities also require that students have the ability to read maps and graphs and be able to scan text in order to locate information. Many adult beginner readers have not yet mastered these skills and will be unable to complete these activities independently.

## GROUP 3. READING COMPREHENSION DEVELOPMENT

**Name:** Real Achievement Solutions: Dilemma  
**Publisher:** Educational Activities Software  
**Copyright:** December 2001  
**System used:** Mac or Windows  
**Age group:** High school through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

### What ages and literacy levels is the software designed for?

Students with high school and adult interests who read between a 2.0 and 5.0 level.

**What skills are addressed?** Comprehension skills and vocabulary knowledge.

**General overview of the program:** This program consists of four units, which advance in difficulty. Each unit contains four stories, and every story is about a real life situation where the main character faces a dilemma. At the end of each story the main character is faced with two choices, and the reader selects the choice he/she thinks is appropriate. The reader then reads the story conclusion. Comprehension and vocabulary questions follow. Once the reader has completed answering all the questions, he or she may read the alternate story ending. Two additional questions follow the final reading.

**Description of program components:** Reading: Each reading passage is about an individual who faces a personal dilemma. Readers select story endings from one of two options.

**Comprehension and vocabulary questions:** Comprehension questions are presented in multiple-choice and true-false formats and require the reader to determine the main idea, make inferences, take look-backs and recall information. Vocabulary activities include Cloze and matching exercises.

### Hardware accessory requirements:

- Mouse
- Speaker (optional)
- Microphone
- Trackball
- Headphones
- Printer (optional)

**Computer skills needed:** Use of mouse. Click and drag. Use of keyboard (hunt and peck). Use of pull down menus.

**Does the program bookmark where a student exits the program?** No. Once a user exits a unit, he/she must return to the beginning.

**Is the material age appropriate?** Yes. The program is designed for mature users. Subject matter includes topics such as vandalism, prostitution, drugs, etc.

**Are the program graphics relevant?** Each story begins with a video introduction, which prepares users for the text to follow. These introductions and the accompanying graphics serve to illustrate story content.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Units are quite long, and students may find it taxing to complete an entire unit in one sitting.

**Does the program make clear its objectives and provide focus on new learning?** No. Objectives are not stated.

**Does the program allow for practice to mastery?** No. Once a unit is completed, students may continue on to the next unit, regardless of score.

**Does the program provide for immediate corrective feedback?** Yes. Students are immediately notified of errors. If they are unable to provide the correct answer on the second try, the program provides the correct answer.

**Does the program provide for practice and repetition?** Yes. The duration of activities provides ample time for practice. Students may also repeat units.

**Program benefits for the adult with LD?** Stories are mature and written for students with high school/adult interests. Since readers must select the story endings, they are required to actively engage in the reading process. Tasks are untimed, so students may work at their own pace.

**Special challenges for the adult with LD?**

Program users must possess advanced reading skills; consequently, the reading material may be too difficult for adult beginner readers. Stories are long.

The vocabulary, even at the lowest level, is advanced. Users are required to read and understand directions, a task that will be difficult or impossible for students reading between a 2.0 and 5.0 level, unless they are provided assistance.

Complete units, which include a story and exercises, are also long. It may be difficult for those students who experience attention difficulties to complete all activities.

## GROUP 3. READING COMPREHENSION DEVELOPMENT

**Name:** Real Achievement Solutions: How to Read for Everyday Living  
**Publisher:** Educational Activities Software  
**Copyright:** December 2001  
**System used:** Mac or Windows  
**Age group:** Students grades 7 through 12 and adults

### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** This software is designed for adults reading at or between a fourth or fifth grade level and students in grades seven through twelve.

**What skills are addressed?** Through a variety of readings and activities, the program addresses both literal and inferential comprehension and attempts to develop students' skill in making inferences and in spelling. It also addresses vocabulary development.

### General overview of the program:

The program is designed to provide students with practice applying reading skills to real-life situations, such as reading labels and menus.

Students select one of the twenty-one lessons from the following six units: labels, menus, ads, jobs, money and travel. Eighteen lessons consist of a reading, vocabulary and a puzzle component. At the end of each lesson, students take a quiz, which consists of ten multiple-choice questions. There are also three practice fill-in lessons that require the students to utilize their skills while filling out either a job application, check or bank deposit/withdrawal slip.

Program activities require that students possess basic mouse skills such as clicking on a target field and dragging and dropping.

### Description of program components:

**Reading:** Each unit begins with an informative passage. Passages are illustrated by relevant graphics.

**Clue words:** The "clue words" page allows students to scroll through a list of vocabulary words that are related to the reading passage, listen to their pronunciations and hear definitions.

**Hypertext:** Hypertext shows graphics (labels, menus, job applications) that are relevant to the reading passages. Highlighted words are included within the graphics, and students may click on those words to read their definitions.

**Puzzles:** Crossword activities require that students use passage vocabulary to respond to clues. Although students may look-back at the “clue words” screen, they are not able to alternate between screens while completing crosswords.

“Spell it right” activities require that students respond to statements by providing accurate spellings of target words. “Drag and drop” activities require that students answer a question by selecting an appropriate word, “dragging” the word into a box and “dropping” it in the box. “Scrambled words” activities require that students unscramble words in order to answer a riddle.

**Quizzes:** Quizzes consist of ten multiple-choice questions that are correlated to graphics.

**Practice Fill-Ins:** There are three practice fill-in activities: job applications, checks and deposit/withdrawal slips. Students must read directions, use a mouse to select the correct field and type in the correct information.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones
- Speaker (optional)
- Trackball
- Printer (optional)

**Computer skills needed:** Use of mouse; click and drag. Keyboard (hunt and peck).

**Does the program bookmark where a student exits the program?** Yes.

If a student exits the program before he/she completes a lesson, the computer bookmarks where the student leaves-off. When the student resumes the program, he/she must complete the lesson before moving on to a new lesson.

**Is the material age appropriate?** Yes. Topics are relevant to adolescents and adults.

**Are the program graphics relevant?** Yes. Graphics are used to illustrate target concepts.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** Individual passage and activity lengths are reasonable in duration. Students may, however, find it taxing to complete an entire unit in one session.

**Does the program make clear its objectives and focus on new learning?** Not directly, but users will likely be able to infer learning objectives.

**Does the program allow for practice to mastery?** No. Users are not required to work to mastery. Once a unit is completed, students may proceed to the next unit, regardless of how they performed on the previous unit.

**Does the program provide for immediate corrective feedback?** Yes. Students are immediately notified of errors. If they are unable to respond correctly on the second attempt, the program provides the correct answer.

**Does the program provide for practice and repetition?** Yes. Program provides ample practice. Students may also repeat units; new scores override previous scores.

**Program benefits for the adult with LD?** The reading passages are mature and informative. An additional benefit is that all program activities are self-paced.

**Special challenges for the adult with LD?** The completion of each unit requires a significant amount of time and attention. Students may become frustrated and lose interest before one unit is complete and wish to begin a new unit the next time they work with the program. The program's bookmarking feature, however, does not allow students this liberty. Students who have limited skill in manipulating the mouse may also become frustrated with program requirements.

## GROUP 4. ADVANCED COMPREHENSION

**Name:** Guides Reading and Study Skills  
**Publisher:** College Entrance Examination Board and Educational Testing Service  
**Copyright:** 1992  
**System used:** Windows  
**Age group:** High school through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies.
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** Ninth grade +

**What skills are addressed?** The program addresses literal and inferential comprehension, text reference skills, word recognition and memorization skills.

### General overview of the program:

The program comprises five diagnostic units: understanding text, text reference skills, memory, words in context and prefixes and suffixes.

Unit duration is between fifteen and thirty minutes. For each unit, students are required to read directions and (in most units) instructional material and then apply this material while answering questions. Most activities require that students navigate the program by using the space bar and Enter key. For additional practice, users may select from a variety of follow-up units. After unit completion, students receive a printed report that notes performance scores and recommended follow-up units.

### Description of program components:

**Understanding Text:** This is a five-part unit. After reading passages, users are required to respond to multiple-choice questions. Questions focus on basic points, facts, text organization, key terms, referents and critical understanding. If a student is unable to reach a set criteria score, he/she is automatically branched to easier material.

**Textbook Reference Skills:** This section is divided into two parts: using the parts of a textbook and skimming. To complete this unit, students read informative passages from a separate book. Questions require that students refer back to the text, use the table of contents, glossary, subject index and name index and skim selected passages to answer questions.

**Memory:** First, students are required to read instructional text regarding effective memorization strategies. Students then complete tasks, which are designed to measure their ability to use the strategies. The first task requires that students memorize a list of twenty “exports” from a fictitious country.

On the second task, students are given a list of eleven word pairs. After memorizing the pairs they are given one word and asked to supply the second word in the pair.

**Words in Context:** This section begins with an explanation of what it means to use words in context. Students are then asked ten questions in which they are required to determine the meanings of nonsense words by using context clues from sentences and paragraphs.

**Prefixes and Suffixes:** Students are asked to provide the meanings of the prefixes and suffixes of target words. If their initial responses are not accurate, they are provided with a brief list of additional words that also contain the target prefix or suffix.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speaker
- Trackball
- Printer

**Computer skills needed:** Use of keyboard (hunt and peck level)

**Does the program bookmark where a student exits the program?** No. If students exit before completing a unit, they must return to the beginning when they re-enter the program.

**Is the material age appropriate?** All material is geared for a college age audience.

**Are the program graphics relevant?** Yes. They illustrate and enhance the material. Only relevant text appears on the screen. There are no additional pictures or diagrams.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** The program does not prevent overloading. Students are required to process large amounts of information within the framework of a single lesson.

**Does the program make clear its objectives and provide focus on new learning?** Yes, learning objectives are made clear through written instructions.



**Does the program allow for practice to mastery?** Students are not required to master one task before proceeding to the next. The Understanding Text unit, however, will automatically move students to easier levels if they are unable to answer a number of questions correctly.

**Does the program provide for immediate corrective feedback?** Yes. Students are informed if their responses are not accurate.

**Does the program provide for practice and repetition?** Yes. The program provides significant amounts of practice and repetition. After completing each unit, students may elect to work on follow-up practice activities.

**Program benefits for the adult with LD?** If students do not find the length of the units to be taxing, they may benefit from the large amount of practice the program provides. This program is particularly useful for college students enrolled in developmental reading courses who need additional practice to reinforce skills learned in class.

**Special challenges for the adult with LD?** This program requires a significant amount of time and concentration. Students with attention difficulties may find the units too long. Adults with LD may prefer a more active learning experience, rather than the program's traditional question and answer format.

## GROUP 5. COMPREHENSION, VOCABULARY, GRAMMAR, SOCIAL STUDIES, SCIENCE, MATH

**Name:** Contemporary's Pre-GED  
**Publisher:** NTC/Contemporary Publishing Co.  
**Copyright:** 1998  
**System used:** Windows/Mac  
**Age group:** High school through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?** It is designed for high school and adult students who are reading at the fifth grade to eighth grade level.

**What skills are addressed?** Fundamental reading, writing and math skills that are necessary for success in GED study.

### General overview of how the program works:

The program is divided into five subject areas: reading, writing, literature and the arts, science, social studies and mathematics. Each subject area has a pretest and posttest component and is divided into units, which consist of three to six lessons.

In each lesson students are required to read instructional material and apply the information when answering multiple-choice questions. Students select answers by clicking the mouse. Students must complete a six-question quiz at the end of each lesson. If they do not reach or exceed a target score on the first try, they may select the lesson review option. If on the second attempt, students do not reach a level of mastery, they are directed to inform the instructor.

### Description of program components:

**Pre-tests/post-tests:** Each of the five subject areas has a pre and post-test component, and the student may elect to take these tests in either “test mode” or “study mode.” If the user selects “study mode,” he/she receives two chances to answer questions correctly. If, on the first attempt, the student selects an inaccurate response, the program provides a hint. If the student again responds inaccurately on the second try, the computer highlights the correct response and provides an explanation. The program manager enables instructors to view student performance and prescribe review materials for unmastered skills. Test items are randomly selected from the program pool to avoid repetition.

**Subject matter units:** Reading units cover comprehension, vocabulary, text structure and critical thinking. Writing units address parts of speech, parts of a sentence, sentence structure, capitalization, punctuation, paragraphing and the writing process.

Literature and the Arts units explore nonfiction prose, fiction prose, poetry, drama and commentary.

Science units are designed to provide instruction and practice in the comprehension of scientific material and the application of scientific principles. Students also learn to analyze and evaluate scientific material.

Social studies units require the comprehension, application, analysis and evaluation of ideas and information.

Math units introduce students to whole numbers, decimals, fractions, basic algebra, measurement and geometry, ratios and proportions, percents and rates and data analysis.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speaker (optional)
- Trackball
- Printer (optional)

**Computer skills needed:** Use of a mouse; click and drag.

**Does the program bookmark where a student exits the program?** Yes. When students re-enter program, they are returned to the menu of the last unit they worked on.

**Is the material age appropriate?** Yes. Program content and the presentation of material are appropriate for mature users.

**Are the program graphics relevant?** Yes. Program graphics are relevant and serve to illustrate target concepts.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** No. The program does not prevent overloading; rather, it introduces a significant amount of material in one lesson.

**Does the program make clear its objectives and provide focus on new learning?** Yes. The program outlines its objectives at the beginning of each lesson, and the focus of the practice remains clear through written instructions.

**Does the program allow for practice to mastery?** No.

Students are not required to reach a level of mastery before they proceed to new skills.

**Does the program provide for immediate corrective feedback?** Yes.

**Does the program provide for practice and repetition?** No. The program does not provide ample opportunity for practice and repetition. A significant number of lessons introduce multiple concepts. The intermittent practice and six-question quizzes may not provide sufficient time on task for students to master target skills.

**Program benefits for the adult with LD?** Program activities are self-paced, a program characteristic that will benefit those LD students who require additional time on task.

**Special challenges for the adult with LD?** The program requires students to read, apply, analyze and synthesize information. A significant number of adult and high school students reading between a fifth and sixth grade level will be unable to fulfill these requirements independently and will need the assistance of an instructor.

## GROUP 5. COMPREHENSION, VOCABULARY, GRAMMAR, SOCIAL STUDIES, SCIENCE, MATH

**Name:** MHC Interactive: Contemporary's GED  
**Publisher:** McGraw-Hill Contemporary  
**Copyright:** 2002  
**System used:** Windows  
**Age group:** High school through adult



### What is the purpose of the software?

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

### What ages and literacy levels is the software designed for?

The software is designed for high school age and adult students reading at the ninth grade through the twelfth grade level.

**What skills are addressed?** The program addresses all reading, writing and math skills that are necessary for success on the GED exam.

### General overview of the program:

Program lessons are divided into five subject areas: writing, social studies, science, reading and math. Each unit begins with a half-time pre-test and concludes with a full-time post-test. There are between two and six lessons per unit. Each lesson begins with an outline of objectives and proceeds with fifteen to twenty-five screens of alternating instruction and practice.

All practice and quiz questions are presented in multiple-choice format. Over forty-five lessons include video clips and timelines, as well as web links to on-line resources. Each lesson concludes with a six-question quiz. Upon completion of the quiz, the student may check his/her answers. If the student does not reach a mastery level, a lesson review option is offered. The review is then followed by an additional six-question quiz. If the student does not reach mastery on the second attempt, he/she is instructed to notify his/her instructor. The student must possess basic mouse skills such as clicking and dragging.

### Description of program components:

**Pre-test/post-test:** Each of the five subject areas has a pre and post-test component, and the student may elect to take these tests in either "test mode" or "study mode." If the student selects "study mode," he/she receives two chances to answer questions correctly. If, on the first attempt, the student selects an inaccurate response, the program provides a hint. If the student responds inaccurately on the second try, the computer highlights the correct response and provides an explanation. The program manager enables instructors to view student performance and prescribe review materials for unmastered skills. Test items are randomly selected from the program pool to avoid repetition.

**Subject-area units:** Writing units cover sentence structure, paragraph organization, the writing process, and mechanics.

Social studies activities require that students understand informational text, graphs and maps and are able to apply, analyze and evaluate ideas.

Science units cover unifying concepts, physical science, life science, earth and space science, history and nature of science and personal and social perspectives in science. The reading units are designed to develop students' comprehension of various texts and understanding of different writing styles and text structures. Students are required to apply, analyze and synthesize ideas.

Math covers number sense and operations, fractions, decimals, ratio and proportion, percentages, data, statistics, probability, algebra, functions and patterns, measurement and geometry.

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones (optional)
- Speaker (optional)
- Trackball
- Printer (optional)

**Computer skills needed:** Use of a mouse. Keyboarding skills.

**Does the program bookmark where a student exits the program?** Yes. Program displays a number line at the bottom of the screen that indicates in yellow where students left off during the previous session.

**Is the material age appropriate?** Yes. All program material is at the high school level and is age appropriate.

**Are the program graphics relevant?** Yes. Program graphics are appropriate and assistive. Over stimulation is avoided through the incremental presentation of text. Students read short instructional paragraphs and click on an icon when they are prepared to view more material.

**Does the program require literacy skills for its use?**

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

**Does the program prevent overloading?** No. The program does not prevent overloading. Multiple concepts are introduced within a single lesson, and these concepts are not sufficiently addressed by the limited number of practice questions.

**Does the program make clear its objectives and provide focus on new learning?** Yes. Each lesson begins with an outline of lesson objectives and the focus of practice remains clear throughout each session.

**Does the program allow for practice to mastery?**

The student is not required to reach a level of mastery before moving to new skills. If a student does not reach a level of mastery on the unit quiz, he/she may select the lesson review option. At the end of the review, the student completes an additional six-question quiz. If the student does not reach mastery on the second attempt, he/she is instructed to inform the instructor. Students may elect to repeat lessons.

**Does the program provide for immediate corrective feedback?** Yes.

The program provides immediate corrective feedback on practice activities. Students also receive feedback on all quiz responses once a quiz is completed.

**Does the program provide for practice and repetition?** No. The program does not provide sufficient practice and repetition. Students are asked to answer only a minimal number of questions regarding newly introduced material.

**Program benefits for the adult with LD?**

LD students will likely benefit from the program's incremental presentation of text. Students read short instructional paragraphs and click on an icon when they are prepared to view more material. A page number bar is displayed on the screen, which allows students to return to previously viewed pages. Students are also given the option of timed or untimed unit tests. All instructional and practice activities are self-paced.

**Special challenges for the adult with LD?**

The program introduces a great deal of information with limited opportunities for practice. Success on practice activities requires that students are able to read and comprehend instructional material and apply that information after a brief instructional presentation. LD students may struggle with such an accelerated presentation of information.

## SOFTWARE EVALUATION FORM

Name: \_\_\_\_\_  
Publisher: \_\_\_\_\_  
Copyright: \_\_\_\_\_  
System used: \_\_\_\_\_  
Age group: \_\_\_\_\_



**What is the purpose of the software?**

- Initial teaching of skills or strategies
- Practice/reinforcement of previously taught skills or strategies
- Application of previously taught skills or strategies

**What ages and literacy levels is the software designed for?**

**What skills are addressed?**

**General overview of the program:**

**Description of program components:**

**Hardware accessory requirements:**

- Mouse
- Microphone
- Headphones
- Speakers
- Trackball
- Printer

**Computer skills needed:**



Does the program bookmark where a student exits the program?

Is the material age appropriate?

Are the program's graphics relevant?

Does the program require literacy skills for its use?

- No reading required.
- All written information is accompanied by audio narration.
- All information is in the form of icons
- Elementary reading skills. A few words need to be read.
- Advanced reading skills required.

Does the program prevent overloading?

Does the program make clear its learning objectives and provide focus on new learning?

Does the program allow for practice to mastery?

Does the program provide for immediate corrective feedback?

Does the program provide for practice and repetition?

Program benefits for the adult with LD?

Special challenges for the adult with LD?



## PART FOUR

### Assistive Technology

Many adult literacy programs are now integrating technology into their curriculum, typically in the form of assistive technology and instructional software. Assistive technology includes, but is not limited to, screen text readers, speech recognition systems, speech aides, and large print word processing. These new technology components, however, are often accompanied by a unique set of challenges, which practitioners must be prepared to address.

In this section, we provide some general information and review a few of the many systems available. Our product reviews are based on the actual experiences of individuals enrolled in adult literacy programs.

We begin with reviews of text reading software, that is, software that reads aloud any digitized text. One of these programs, CAST's *eReader*, is the major component of the assistive technology used by the Adult Literacy Program at AECOM.

We describe the teaching process and discuss the problems and benefits of using the *eReader* with low literacy adults. We also provide a brief overview of the Kurzweil 3000 and one of the Franklin talking dictionaries.

Next, we provide an overview of the features of the *Dragon Naturally Speaking* dictation software. Then we describe an experiment in which we examined the process of teaching two adults in the Adult Literacy Program how to use the *Dragon Naturally Speaking (DNS)* software. We discuss the problems and advantages in using the DNS software with adults with low literacy and learning disabilities.

Finally, a system for teaching keyboarding skills is presented.

Reviews of other assistive technology devices can be found in Appendix A.

## TEXT READING SOFTWARE

<b>Name:</b>	<b>CAST eReader</b>
<b>Publisher:</b>	Center for Applied Special Technology (www.CAST.org)
<b>System Used:</b>	Windows 95, 98, NT, ME, 2000. Macintosh OS 7, 8, 9 (Macintosh version does not have Internet reading capabilities)
<b>Age Group:</b>	Any age

### General description

The CAST eReader reads text from the Internet, word processing files, and typed-in or scanned-in text from textbooks, books, papers, or other sources. The user is able to choose the voice (male or female, high or low pitch, volume, and several other options) that will read the text. Reading speed can be regulated to suit the individual's rate of processing verbal information. The text can be read line by line, sentence by sentence, or as a whole without stopping. At any time, the reading voice can be stopped and re-directed in order to re-read sentences, words, or other portions of the text. (Potential purchasers can download the eReader from the CAST website for a limited amount of time at no cost to see if it suits their needs.)

### Using the CAST eReader at the Adult Literacy Program at AECOM

Following is an overview of the CAST eReader based on the experience of some adults in the Adult Literacy Program (ALP) at AECOM. We discuss both the successes and the difficulties involved in using such a program with adults with reading disabilities. We note their preferences for some of the options, such as voice type and text reading speed, and recount some of the problems experienced when using the eReader.

**Selecting a voice.** As noted above, the eReader allows users to choose from several types of voices, some of which may be unsuitable for adults with learning disabilities because of distortion in the sound. In our experiences at the ALP, the best voice options have been Mary and L&H

Real Speak (Jennifer) American English (v. 1.00, Female # 1). While there is still some distortion in these voices, they are much clearer than the alternatives. However, the most recent version of e-Reader (version 3.0) offers more intelligible voice options, AT&T Natural Voices™. These voices do not have the distortion present in previous versions. It may be best to base voice selection on the individual's preference since everyone has different auditory abilities. Voice type can be changed easily, so decisions are not binding. Changing and experimenting with different voice options at any time is not a problem and is highly recommended. Many Adult Literacy Program participants prefer to use headphones rather than speakers. They find the voices easier to hear and understand that way.

**Choosing the length of text to be read.** Text can be read in a variety of ways, including individual words, sentences, or complete text. Visual highlighting allows the user to follow along as the computer voice reads the text. At any time the user can stop the voice and go back to a previous word or sentence.

**Using commands to control the eReader.** In order to effectively use the eReader, the user must be relatively comfortable using a mouse and with general keyboard commands (i.e., arrows, enter, space bar, and backspace). Many adults with learning disabilities have an inadequate understanding of these commands and should be taught how to use the mouse and keyboard prior to using assistive technology.

The toolbar at the top of the screen provides commands that resemble those found on media

devices such as a CD player (e.g., stop, play, rewind, fast forward), making them easily recognizable to many adults with learning disabilities. The “auto step back” command, represented by an arrowhead facing left, repeats the previous sentence and then continues with the remaining text. Alternatively, the “step back” command (arrowhead facing left towards vertical line) commands the eReader to read only the previous sentence. The arrowhead facing right (“auto step ahead”) reads the following sentence and continues with the remaining text whereas the arrowhead facing right towards vertical line (“step ahead”) commands the eReader to read only the following sentence.

Adults with higher reading levels may wish to use the eReader voice to read only unfamiliar words. By highlighting unfamiliar text with the mouse and executing the “read highlighted text” command (ABC on the toolbar), the user is able to have only that section of text read to them. At any time the user can stop the computer voice by utilizing the “stop” command, represented by a black square. The eReader voice can be turned on or off at any time by executing the “voice on/off” command (represented by a speaker) and a new voice can be selected using the “select voice” command (represented by a face).

**Navigating the Internet.** Adults in the ALP appreciate the opportunity to learn more about current events and other areas of interest via the Internet. The “open browser home” command allows users to access the Internet. In addition to the eReader toolbar at the top of the screen, the same navigation tools as those used when normally browsing the Internet are provided (e.g., browse forward/back, refresh, stop loading). Some adults in the ALP have set up e-mail accounts and use eReader to read e-mail messages. Despite the benefits, there are some problems and many low literacy adults will need assistance in navigating the Internet. Occasionally, the eReader voice will read hyperlinks, which can be lengthy and very confusing to the user. In order to stop the computer voice while reading such links, the user must execute the “select voice” command and change the voice. Before returning to the page, the

user can switch back to the voice they were originally using. This process can be very confusing and therefore frustrating for some individuals. Assistance will most likely be required.

**Using advanced eReader applications.** In this section, a variety of activities will be described that can be performed using the “new eReader document” application. Using this application, the eReader can be used as a word processor to type words, sentences, letters, and compositions. In addition, text can be typed or scanned in from other sources to the new eReader document, allowing adults to access reading material that would otherwise be unavailable to them.

Adults who function at higher levels can use the new eReader document to write longer documents, such as letters and essays, an activity that is often very difficult for learning disabled adults to accomplish independently. All work can be saved and accessed at a later time using the “open file” command. General knowledge of keyboard commands becomes more important when using the program for such activities. Adults with lower reading levels have the opportunity to have articles, entire short stories, and books read to them by having text typed or scanned into a new eReader document. This is particularly beneficial for adults whose poor decoding skills interfere with their reading rate and comprehension.

**Hearing misspelled words pronounced helps adults correct their spelling.** Many clients in the ALP have found this eReader application particularly useful in finding spelling errors in their written work. They type their spelling words, sentences, or essays and then use the eReader to read their work aloud. When playing back the words or sentences, they are able to identify words that do not sound as they should. Several students in the ALP feel that having the words read to them by the computer helps them to narrow down the location of their mistakes, thereby minimizing the likelihood of guessing when making corrections. This seems to be particularly true when the mistake is in the first or last syllable of a word. When the user is unable

to locate errors, they can utilize the spell check command (ABC √).

**Seeing and hearing words simultaneously helps adults learn syllable spelling.** Even when there are no spelling errors, adults in the ALP have found it beneficial to listen to the eReader reading the words. Hearing a word pronounced while simultaneously seeing the written word on the screen helps them to remember the sounds in syllables that commonly occur in words.

**Using the eReader for listening comprehension.** By scanning or typing text into the computer, readers of all levels have the opportunity to work on both reading and listening comprehension. The visual highlighting allows the reader to follow along with the text. Although lower functioning adults are unable to recognize many of the words as they are highlighted, they are able to hear vocabulary words that would

otherwise be inaccessible. At the end of a session, the user has the option to mark where they left off in the text by executing the mark place command (located between select voice and spell check) and return to that place during a later session.

**Conclusions:** The CAST eReader is a beneficial tool for any literacy program. It can be used with adults at all levels of functioning. Even when it cannot be used independently, it gives adults with learning disabilities the opportunity to access information that would otherwise be unavailable to them. The structured format of the program, along with assistance from tutors, makes technology and the Internet less intimidating. While it will no doubt take some time and effort to acquaint users with this program, the long-term benefits are invaluable to their self-esteem and motivation.

## TEXT READING SOFTWARE

<b>Name:</b>	<b>Kurzweil 3000</b>
<b>Publisher:</b>	Kurzweil Educational Systems ( <a href="http://www.kurzweiledu.com">www.kurzweiledu.com</a> )
<b>Systems Used:</b>	Windows and Macintosh
<b>Age Group:</b>	Any age

The Kurzweil 3000 is an assistive technology software program that is designed for users with reading disabilities. The program enables users to scan text into the computer and listen as the text is read back. In addition, users can also access and listen to readings of text from the Internet. To better enable users to follow along, the program simultaneously highlights sentences as it reads them. The user control panel allows users to skip ahead and to playback previously read text. Users may choose from a selection of digital voices and can adjust both the voice rate and pitch. The system has a recursive dictionary feature, which enables users to click on unfamiliar words and hear their definitions.

The program, which is often used by college students with learning disabilities, offers study skill tools that enable users to highlight important information and add voice notes to text. In addition to the program's audible spell check feature, it also reads letters aloud as the student spells. Users' work may be saved to a network file, and they may access their work from any computer hooked up to the same network. The program also has test taking features that read back classroom and standardized exam questions and student responses. For ESL students the program provides audible definitions and correct pronunciation in English, French, German, Spanish or Italian.

## DESKTOP TALKING SPELLER/DICTIONARY

<b>Name:</b>	<b>Merriam-Webster Speaking Dictionary and Thesaurus (MSW 1840)</b>
<b>Publisher:</b>	Franklin Electronic Publishers (www.franklin.com)
<b>Systems Used:</b>	Desktop device (not computer based)
<b>Age Group:</b>	School age and adults

Instructors often encourage adults in literacy classes to read books and newspapers outside the classroom. Due to limited decoding skills and vocabulary knowledge, however, many find this a difficult task to fulfill. Fortunately, there is assistive technology available to help disabled readers to read materials independently. An electronic word reading/spelling device is an essential aide for the low literacy adult. The Merriam-Webster Speaking Dictionary and Thesaurus (MWS-1840) is one of many electronic spelling devices made by Franklin. Although the MWS-1840 is classified as a desktop model, it is lightweight and small enough to fit inside a purse or schoolbag. The MWS-1840 is much more than a speaking dictionary and offers a variety of features.

The phonetic spelling correction is the most useful component for adult literacy students. Since adult literacy students are always weak spellers, they experience significant difficulty when attempting to look up words in the dictionary. The MWS-1840 offers two options to assist these students. If a student wishes to find the spelling of a particular word, the phonetic spell correction allows users to type in a word's phonetic spelling. The computer then provides a list of phonetically similar words in which to select from. For example, if a student enters "tuhmatoe," the program will provide a list that includes the words "tomato" and "tomatoes." If she enters "sikologee," the target word "psychology" will be listed along with other options. If the student cannot read well enough to determine which spelling represents the correct word, she can press the "say" button to hear each word.

Another useful option for weak spellers is the MatchMaker. This option enables users to type in an asterisk for any unknown letters and provides a list of spelling options. For example, if a user wants to spell the word "word," but only knows the initial and final letters, she may simply type in "w\*d." MWS-1840 will then provide a list of options that includes the following: "word, wild, wind, wand." At any time, users may press the "say" option in order to hear word pronunciations and definitions.

### Why did the AECOM Adult Literacy Program choose the MWS-1840?

In addition to the highlighted options, the MWS-1840 offers a variety of other features including a grammar guide, learning exercises and an SAT word list for more advanced readers. Since the scope of program features is broad, students may continue to use the MWS-1840 even as they advance through literacy levels.

### ALP Student Assessment of the Franklin MWS-1840.

Adult students at the Adult Literacy Program responded positively when asked about the usefulness of the MWS-1840. In addition to using it in class, students also use it when reading independently at home or on the train. Despite the program's many functions, students used the device primarily to read or check words that are difficult to decode, to find the correct spellings of words and to look up word definitions. Some adult learners have difficulty understanding the computer's "voice" when they first start to use the Franklin. Most, however, find that they get used to the voice and can understand it. Using headphones can be a big help.

# VOICE RECOGNITION DICTATION SOFTWARE

<b>Name:</b>	<b>Dragon Naturally Speaking (version 6.0)</b>
<b>Publisher:</b>	Scansoft
<b>System Used:</b>	Windows
<b>Computer Requirements:</b>	700 MHZ minimum; 850 MHZ or more preferred

Dragon Naturally Speaking (DNS) is a voice recognition dictation program that can be used to write reports and letters and to engage in hands-free computing. DNS users may dictate, rather than type, information into Microsoft Word, WordPerfect and e-mail programs. Users may also access the Internet and navigate the web without having to type or manipulate the mouse.

To get started with Dragon Naturally Speaking (DNS), each user must create a voice profile in order for the program to learn to recognize the user's voice. According to DNS, this can be done in about 15 minutes. A microphone is required. Headphones are also recommended in order to hear the playback of dictation more easily. Users can opt for "natural punctuation" created by the DNS program or they can dictate the necessary punctuation.

At the time of this review, an upgraded version of DNS (DNS version 7.0) was available. We review version DNS 6.0, which is used in the Adult Literacy Program at Albert Einstein College of Medicine (AECOM).

## Using Dragon Naturally Speaking (Version 6.0) in the Adult Literacy Program.

Many adult literacy students avoid engaging in writing tasks, often because of their poor spelling. The following project was designed to determine whether adult literacy students could use speech recognition software as a tool to assist them in completing common writing tasks, such as writing lists, letters, and short essays.

Two students from the Adult Literacy Program volunteered to participate in the project. They were paired with two practitioners. They met for

one hour a week for several weeks. Working alongside the students, the practitioners taught them how to use DNS, monitored their progress, and observed their behaviors and reactions while using the program. One student/practitioner team (Team A) worked together for a total of five session hours, while the other team (Team B) completed nine hours.

**Training the Dragon to recognize student speech.** During the first session, the practitioners explained the purpose of the DNS program and guided the students through the initial training process. In order for DNS to accurately transcribe a user's words, it is first necessary for users to train the program to recognize their speech by reading a training script into a microphone.

Prior to the first meeting, the practitioners transcribed the training script, which is intended by DNS program publishers to be read directly from the computer monitor, onto paper. The practitioners believed that this would reduce student anxiety because the students were more familiar with reading from paper than from a computer monitor.

Due to the relatively advanced reading level of the scripts, it was necessary for the practitioners to sit alongside their students throughout the training process. This enabled the practitioners to whisper the correct pronunciations of words into students' ears when they reached unfamiliar words. The practitioners also encouraged the students to use the "pause" option, which enabled the students to pause the program during training, review the script and return to training when ready. It was vital that reading support be supplied during this training phase.

### **Training the students to dictate to the Dragon.**

Before students engaged in dictation activities, the practitioners explained how to turn on and shut down the DNS program. The students were also taught how and when to use voice commands for various purposes. For example, to begin the dictation process, the user tells the Dragon to “Wake up.” Not surprisingly, the command to stop the dictation is “Go to sleep.” Students were also taught how to correct their dictated work and how to navigate the program manually without voice commands.

Since the project goal was to determine whether adult beginner readers would benefit from using DNS for practical purposes, the practitioners encouraged the students to engage in tasks that were both interesting and meaningful. Activities initiated by the practitioners included writing letters, e-mail, and composing grocery lists and autobiographies. The practitioners noted that both students appeared to be more willing to dictate from texts than to generate their own ideas. Consequently, the students often requested to begin sessions by reading passages from books and training scripts, rather than to immediately engage in self-generated dictation activities.

**A-Team experience with DNS.** Student A’s reading speed had a significant affect on the accuracy of the DNS transcription. When he dictated passages from text, he read very quickly, apparently due to his nervousness. His rapid reading pace may have led to the many transcription errors in the dictation product. The student also experienced a great deal of difficulty when using voice commands. With the exception of the “Go to Sleep” and “Wake Up” commands, the computer would usually transcribe the command words rather than obeying them. This often led to the insertion of extraneous words into the text. In response to this problem, the student elected to use the mouse to correct transcription errors. The student had experience using computers and was therefore able to execute manual corrections with ease.

**An unforeseen benefit.** During the initial sessions, the practitioner realized that student A had a speech impediment and hypothesized that

the student’s speech difficulties may have contributed to some “inaccurate” transcriptions. The practitioner noted, however, that the student’s pronunciation of words was consistent. Consequently, after making some initial error corrections, DNS generally transcribed those words accurately. The student remarked that using the program was actually helping to improve his speech because it forced him to attend more carefully to word pronunciation. In order to produce correct transcriptions, he could no longer ignore pronouncing /s/, /t/, and /d/ at the end of words.

Our work with DNS helped reinforce for us the need to be sensitive to the environment our adult learners work in and to their emotional needs as learners. We initially held our sessions in an open lab where others were working as well. Since DNS involves speaking aloud, one adult learner noted his discomfort at having to dictate his thoughts with others within hearing distance. His discomfort was such that he wanted to discontinue the training. Private sessions may be best for most adult learners just starting out with this kind of assistive technology.

**B-Team experience with DNS.** Student B had minimal computer experience and encountered difficulty performing basic computer tasks, such as turning the computer on and navigating with the mouse. Similar to the experience of Student A, the program often responded to Student B’s voice commands by transcribing the commands rather than adhering to them. For example, if the student used the “new line” command, the program would transcribe the words “new line” rather than jump to the next line. To control for this problem, the practitioner had to teach the student how to correct errors manually. Student B experienced a great deal of difficulty controlling the mouse and often needed the instructor to assist him in selecting and highlighting text. At times, the practitioner needed to make the corrections for the student. Student B also experienced difficulty recalling voice commands and often relied on the practitioner to remind him. One of the student’s greatest problems was forgetting to put the microphone to sleep. This



would often result in the insertion of unwanted material into text.

**Unexpected difficulties.** The practitioner teamed with Student B realized after several sessions that the student did not fully understand the function of the DNS program. Despite explanations that the program was designed to enable users to record, rather than write, their ideas, the student often spoke directly to the computer as if it were a person who was able to understand his intentions rather than a machine that merely recorded his speech. For example, when required to write letters or lists, the student would often preface by dictating, “I am going to write about...”. The practitioner also noted that the student experienced a great deal of difficulty articulating his ideas when speaking into the microphone, and often produced incoherent sentences.

**Correcting transcription errors.** Due to Student B’s reading and spelling difficulties, he was unable to identify a significant number of transcription errors on his own and relied on the practitioner to proofread and edit his work. The practitioner introduced the DNS playback feature, which was designed to enable users to listen to a recording of their speech as they read along and correct errors. Since the student’s reading rate was significantly slower than his speaking rate, he was unable to read along with the audio playback.

**Retraining the Dragon to “hear” better.** DNS publishers note that in order to increase transcription accuracy, users may need to retrain the program periodically. Due to the significant number of program transcription errors noted during the post-training sessions, both teams decided to retrain the program. Team A retrained during the fourth session, while Team B retrained the program on the fifth session.

### **General Conclusions:**

Dragon Naturally Speaking was not designed for users with reading, writing, and spelling difficulties; therefore, it is not an ideal program for adult

literacy students. Users must possess basic computer skills, as well as reading and writing skills, in order to use the program. It must be kept in mind that after the initial training has been completed, the accurate transcription of words is not guaranteed. In order for transcription accuracy to improve, program users must be able not only to read transcribed words, but also to identify and correct errors—a task that adult literacy students may have difficulty fulfilling. Nevertheless, some literacy students may find DNS to be a useful self-monitoring and learning tool.

### **Recommendations for using DNS with adult literacy students**

- 1.** Transcribe training scripts in advance so students can familiarize themselves with the text prior to dictating. Instructors should sit alongside the students throughout the training to provide assistance as needed.
- 2.** Adult students may have difficulty with basic computer tasks, such as turning on and shutting down the computer and navigating with the mouse (clicking target words, highlighting text). Students should complete a computer skills survey to determine whether they will require preliminary computer instruction.
- 3.** The working environment is very important. Since students must present their ideas orally, some may prefer to work alone. If instructors know that others will be present during sessions, they should consult with students to ensure that they are comfortable.
- 4.** Students who have difficulty reading and spelling will have difficulty detecting and correcting transcription errors. Therefore, it may be necessary for instructors to work alongside students as they attempt to proofread and correct their work.
- 5.** Design authentic writing tasks rather than abstract tasks such as “Imagine you are writing a letter or e-mail message to a friend in California.”

Have students actually send an e-mail message to illustrate the point that writing is a means of communication.

6. DNS can be used to monitor word pronunciation, especially with adults who have speech difficulties or who are ESL students.

7. Instructors may wish to introduce relaxation

techniques, such as breathing exercises, for those who experience anxiety when using the program.

8. Although program publishers discourage users from focusing their attention on the computer monitor while dictating, there is no one method that works best for all students. It is important that instructors identify what works best for each individual student.

## TYPING AND KEYBOARDING INSTRUCTION

### When “Hunt and Peck” is Not Good Enough

<b>Name:</b>	<b>Keyboarding Skills</b>
<b>Publisher:</b>	Educators Publishing Service (www.eps.com)
<b>System Used:</b>	Not applicable. (Not a computer-based program.)
<b>Age Group:</b>	Any age group old enough to learn to type.

Sometimes “hunt and peck” typing is just too slow and frustrating for some writing tasks. Individuals with reading and spelling disabilities most likely never learned to type in school and may be intimidated by the prospect of learning how to type as an adult. The need for touch-typing skills for word-processing and other computer tasks has resulted in the need for a touch-typing instruction method that can be used by language learning disabled students of all ages, including low literacy adults. *Keyboarding Skills* is a touch-typing method that was created specifically for LD individuals.

**How does this method differ from the usual touch-typing methods?** It was designed to be compatible with a multi-sensory, systematic, phonics-based approach to teaching reading and spelling. *Keyboarding Skills* not only teaches touch-typing, but it incorporates spelling practice into the learning process as well.

Instead of the usual touch-typing teaching approach that uses **a, s, d, f, / j, k, l** left/right hand placement to teach the keyboard,

*Keyboarding Skills* uses an alphabetic sequence to teach the keyboard. The first sequence, **a, b, c, d, e, f**, is learned using the left hand. The method includes naming the letter aloud as it is pressed in order to establish a conditioned reflex. The letters are practiced in progressively longer alphabetic sequences while naming the letter aloud. For example, the student begins by practicing **ab**, then progresses to **cde** and **fg**, and finally to **abcdefg**. The next two groups, **hijkl, mnop**, are learned with the right hand. This procedure continues until the entire alphabet has been mastered.

After extensive practice with the entire alphabetic sequence, students begin writing two-letter words, such as **an, as, if, of, or, so, is, go, it, me**, etc., while naming the letters aloud. They progress to typing three- and four-letter words in word families, such as **seem, deep, beep, meet, miss, mass, pass, hiss**, etc. Practice continues in a systematic, sequential, multi-sensory manner, eventually progressing to typing phrases, sentences, and multi-syllabic words.



## PART FIVE

# Integrating Technology into a Literacy Program

**T**echnology provides practitioners with a wonderful means of supplementing instruction. It is vital, however, that an attempt is never made to substitute instruction by placing students on the computer. Technology is most effective when it is strategically integrated into a program that adheres to the six basic principles of instruction, which were discussed in Part 2 of this manual. Following are some suggestions for integrating instructional technology into a literacy program:

1. Evaluate instructional software using the format provided in this manual or a similar format before including it in your instructional program.
2. Instructional software is most effective when it is used for the practice and reinforcement of skills and strategies that have already been taught.
3. Make sure to keep tabs on comprehension when students use screen readers to listen to texts. Use follow-up questions to ensure that students understand what was read.
4. Although screen readers provide wonderful opportunities for individuals to access information (especially those whose listening comprehension skills far exceed their decoding abilities), it is important that students have ample opportunity to read text written at their instructional levels. Simply listening to texts may help to develop background knowledge, but it will not help develop fluency in word reading if the text is at too high a level.

Following are some examples of how technology can be effectively integrated into different types of instructional programs. It is important to note that if a practitioner experiences a significant degree of difficulty incorporating an instructional technology program into their curriculum, then it is very possible that the instructional software being used is not a good match for the literacy program.

### **Incorporating an instructional software program into a one-to-one literacy intervention session:**

Most students enrolled in the AECOM Adult Literacy Program have severe reading disabilities. Practitioners who work with these students on an individual basis use the Wilson Reading Program, a multisensory language program that teaches decoding skills. One software program that can be easily integrated into instruction using the Wilson Reading Program is Reading SOS. This instructional software program provides practice and reinforcement of skills taught in each of Wilson's twelve steps. Students participating in one-to-one intervention sessions, often spend the last fifteen minutes of session time practicing with Reading SOS. It is important to note that, when using the program, students are not permitted to advance to a level unless skills introduced in that level have first been introduced during session time. Since one-to-one intervention sessions are often very intensive, Reading SOS is a nice tool for enabling students to wind down by working independently. Consult Appendix B for a breakdown of Wilson steps and corresponding Reading SOS levels and review the evaluation of Reading SOS on page 26.

*An adult learner at AECOM, whose high level of anxiety appeared to adversely affect his performance during intervention sessions, responded very positively to using the Reading SOS program. It seemed that the brief session time he spent on the computer offered a welcome reprieve from regular session time, which required a great amount of practitioner/patient interaction. Although this student had no significant computer experience, he learned how to use the program in little time.*

### **Using assistive technology during a one-to-one literacy intervention session:**

Practitioners at AECOM also incorporate assistive technology into their one-to-one intervention sessions. The CAST e-Reader is an assistive screen reading device that reads text from the Internet, word processing files

and scanned in text (read a detailed description of the eReader on pages 58-60). Since it is often difficult to find "high-interest" text for adults with reading disabilities, practitioners at AECOM often use the eReader as part of comprehension development. The eReader is particularly beneficial for those students whose comprehension abilities exceed their decoding abilities. The eReader enables students to select topics of interest and access text that they may otherwise be unable to read. Once a student finds a webpage, he can read the text and use the eReader as necessary (users may select whether they want a word, sentence or entire page read back to them). Again, assistive devices should only be used to supplement instruction.

*A student in the AECOM Adult Literacy Program expressed his interest in World War II after watching a documentary on television. Although the practitioner was able to provide the student with some materials written for adult beginner readers, these materials gave only a brief overview of the war and failed to answer the student's questions. By using the eReader the student was able to access information that was both exciting and intellectual stimulating.*

### **Incorporating an instructional software program into a group literacy intervention session:**

ALP group intervention sessions are based on the SIPPS program (Systematic Instruction in Phoneme Awareness, Phonics and Sight Words). The instructor has successfully integrated instructional software into his curriculum by having students work on the computer using Reading SOS during the last fifteen minutes of each session. Although groups are divided by reading level, each group is comprised of students with different abilities and areas of strength and weakness. Based on each student's performance during intervention sessions, the practitioner determines where each is experiencing difficulty. He then assigns

Reading SOS applications that meet each individual's needs.

*The practitioner noted that members of his advanced group, some of whom were initially reluctant to use the program, appeared to both enjoy and benefit from practice with Reading SOS. He found that the group appeared to retain information better when they practiced with Reading SOS. Unexpectedly, the group developed a good-natured rivalry, keeping track of who advanced to the highest level.*

### **Using assistive technology during group intervention sessions:**

AECOM's practitioner devised an innovative way to use the Cast eReader when conducting spelling practice with his groups. Often when spelling multisyllabic words, students pause after each syllable to verify their spelling. This makes it rather difficult to manage a group, when multiple members simultaneously call for practitioner feedback. The practitioner discovered that if students used the eReader while engaged in spelling practice, they could listen to playback of their typed work as often as desired. He did note, however, that there was some voice distortion, which made it difficult for students to determine if their spellings were accurate. Advanced students also use the eReader during the final fifteen minutes of sessions to practice reading high interest text.

*One student in the Adult Literacy Program uses the eReader as a reading comprehension tool. After first reading the text himself (using the e-reader only to identify unfamiliar words) he then uses the eReader to listen to the narrated text as he follows along. The practitioner noted that this student is more familiar with computers than the others in his group and, consequently, appears to make greater use of the eReader.*

### **Incorporating instructional software into a GED program:**

A GED program in the state of Connecticut, which is sponsored by a city board of education, uses instructional software as an adjunct to classroom instruction. Students enrolled in the program meet four days a week for an hour and forty-five minutes each session. Three of those days are spent in the classroom, and the fourth day is spent in the computer lab working with a variety of GED software, including MHC Interactive: Contemporary's GED and Steck Vaughn's GED 21st Century (see evaluations of programs on pages 52-54). It is important to note that the GED classroom instructor stays in the lab with the students to provide assistance and answer any questions students may have. The computer lab is also open throughout the week, and students are permitted to use the software programs during those times that the lab is not in use.

### **Incorporating instructional software into a community college developmental reading course:**

Students attend class for three hours each week. The class is designed to develop students reading comprehension, critical thinking and study skills. In addition to the three hours spent in class, students are required to spend one hour each week in the school's academic support center. At the center the students use the Guides program (see pages 46-48 for a detailed description) to practice skills taught in class. Center tutors (mostly graduate students, retired teachers and adjunct faculty) are available to assist students who are working on the Guides program. Tutors must also sign a sheet verifying that each student completed the computer assignment. This sheet is then returned to the course instructor.



## PART SIX

# Ergonomics

**M**any adult literacy programs are now integrating computer-based technology into their curriculums, typically in the form of assistive and instructional software. It is a disturbing reality for many learning disabled individuals, as well as those who work with them, that the classroom and very tools designed to assist these students may exacerbate their difficulties. Computer work requires students to adjust to a new set of physical demands, which practitioners must be prepared to meet by attending to workstation ergonomics. If ergonomic related issues are properly addressed, practitioners will be able to minimize sources of students' physical discomfort, thus enabling students to attend more fully to educational activities.

One cause of physical discomfort that results from computer use is duration. According to information posted on the Yale University Ergonomics website (<http://www.yale.edu/ergo/>), duration refers to the amount of time an individual remains in a static position in order to perform a task. The longer a muscle or muscle group is used to maintain a position, the greater the risk of muscle fatigue. It is therefore recommended that computer users take breaks at least every twenty minutes.

This is of particular importance for students with attention difficulties. By allowing students to take periodic breaks, practitioners can maximize their gains.

Muscles that are not directly used for computer work also become fatigued; therefore, it is essential that computer users maintain correct posture. By maintaining correct sitting posture, students may avoid placing undue force on a particular part of the body. In an effort to prevent discomfort resulting from poor posture, practitioners should make sure that students' chairs are adjusted properly. Proper seat adjustment places users in a neutral position, enabling them to press their feet against the floor ([www.yale.edu/ergo/](http://www.yale.edu/ergo/)). If chairs are not adjustable, then practitioners may wish to use Gym Balls, large rubber balls typically used for strength, balance and flexibility exercises, in place of chairs. Practitioners may also place Dyna Discs atop chairs in an effort to help students monitor and adjust their own posture. These four-teen-inch inflatable rubber dynamic surfaces adjust to the user and enable the users to actually feel when they are not maintaining proper alignment ([www.exertools.com](http://www.exertools.com)).

Dyna Discs may also be useful for students with attention difficulties. Since many of these students find it difficult to remain stationary for extended periods of time, they are often unable to fully devote their attention to the task at hand. By using Dyna -Discs students will be able to maintain a degree of mobility while sitting comfortably. As previously noted, these discs adjust to user weight shifts and enable users to shift positions in their chairs without distracting others in the classroom.

To ensure that all ergonomic issues are fully accounted for, it is recommended that an occupational or physical therapist evaluate classrooms and computer labs. These professionals may assist in the positioning of tables, computer monitors and the adjustment of chairs. If this is not an option, following are a set of guidelines set forth by the American Physical Therapy Association (2002).

1. The APTA recommends that computer users keep their feet on the floor and knees bent at a 90-degree angle. If the users feet do not reach the ground, and the chair is not adjustable then it is recommended that footrests be used to compensate.
2. Users should sit up straight. This means that the weight of the body should be distributed on the feet and the buttocks.
3. In order to keep the eyes level with the screen, the top of the users head should be parallel with the top of the computer monitor.

4. User forearms should be parallel to the floor and elbows should be bent at a ninety degree angle.
5. To prevent neck pain, the shoulder blades should be settled on the back of the ribs rather than hunched.
6. In order to prevent muscle strain, the mouse should be placed as near to the keyboard as possible.
7. To prevent eyestrain, users should look away from the computer as often as possible. It is recommended that when users look away, they focus on distant objects.
8. Users should avoid long periods of stillness by taking breaks every twenty minutes.
9. While seated, users should stretch by turning their heads and rolling their shoulders.
10. Users should be aware of their own comfort and address any issues of discomfort early.

By accounting for user posture and workstation design, educators may create a more learner friendly environment, which will enable students to work and focus on the task at hand without the added distraction of physical discomfort.



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## APPENDIX

### Assistive Technology Resources List

This list was prepared by Bart Pisha, Chuck Hitchcock, and Skip Stahl of CAST ([www.cast.org](http://www.cast.org)) and was originally published in the Fall, 2003 issue of Perspectives, a newsletter of The International Dyslexia Association ([www.interdys.org](http://www.interdys.org)).

We are grateful to Bart, Chuck, and Skip and to the International Dyslexia Association for their permission to reprint this list.

**Note:** This resource list is provided strictly as a resource. It is in no way intended as an endorsement of any specific product or person. Additionally, this is not an exhaustive compilation of all technologies available, but rather provides a representative sampling for several categories. It is also important to emphasize that selection of appropriate technologies requires a careful analysis of the interplay between specific tasks to be performed, contexts of use, and the individual's strengths, weaknesses, special abilities, and interests. Whenever possible, consultation should be sought from a qualified professional in learning disabilities and technology prior to selection and purchase of any product or service.

Please note also that the authors of this list are affiliated with CAST, which developed and publishes CAST's eReader, listed below.

*Text-to-Speech Supported Reading Software. Each of the software programs in the list below will “read” digital text aloud. The programs vary greatly with respect to ease of use, features, and cost.*

**FREEWARE.** Freeware programs can be downloaded from the Internet and used by individuals at no cost:



### **Acrobat eBook Reader**

<http://adobe.com/products/ebookreader/main.html>

The free Adobe® Acrobat® eBook Reader™ enables individuals to read eBooks on their notebook or desktop computer. This reader software displays eBooks with the pictures, graphics, and fonts similar to printed books. The Windows and Macintosh versions take advantage of system-level text-to-speech support (no synchronized text highlighting) to read the text from an eBook or PDF file.

NOTE: If the publisher grants permission to enable this feature, the legend Read Aloud will appear on the program's command bar. Clicking this command will display simple audio-player controls and will read the text aloud.

The Acrobat eBook Reader also provides extensive text magnification capabilities.

### **HearIt!**

[http://www.ldresources.com/resources/macintosh\\_shareware.html](http://www.ldresources.com/resources/macintosh_shareware.html)

HearIt! utilizes a control panel item that works with the Speech Manager to speak all the text that can be highlighted. This is freeware and is available for Macintosh users, grade 2 to adult.

### **HELP Read**

<http://www.pixi.com/~reader1/allbrowser/>

HELP Read freeware has received numerous software awards and is highly recommended by many Web sites and software reviewers. Available in Windows version for grade 2 to adult.

### **Microsoft Reader Software for a Desktop or Laptop**

<http://www.microsoft.com/reader>

Microsoft Reader is a free software application designed to deliver an on-screen computer reading experience that for the first time approaches the convenience and quality of paper.

Microsoft Reader is the first product to include Clear Type display technology. Clear Type greatly improves resolution on LCD screens to deliver a print-like display. Microsoft Reader also pays strict attention to the traditions and benefits of good typography. It offers a clean, uncluttered layout; ample margins; proper spacing, leading, and kerning; plus powerful tools for bookmarking, highlighting, and annotation. Support for SAPI 4 and SAPI 5 voices is included.

### **Text Talker v.1.0**

<http://www.code-it.com/downloads.htm>

TT1.0 is a software application that, once activated, the program icon resides conveniently hidden in the lower right system tray ready for instant use. It speaks the content of the clipboard by means of an animated character after any text has been copied (e.g., e-mail, web page, text document). In simple language, it is a blue animated Genie that speaks the clipboard content. This application uses Microsoft Active X Agent® Technology. The software has been beta tested and “talks” all clipboard content regardless of what type of document it was copied from.

*Shareware. Shareware program can be downloaded from the Internet and used for a trial period without payment. If individual decides to continue using them, they are expected to pay a relatively modest shareware fee:*

### **Tex-Edit Plus**

<http://www.tex-edit.com/index.html#Tex-Edit%20Plus>

“Tex-Edit Plus version 4.0 is a scriptable, styled text editor that fills the gap between Apple's bare-bones



Simple Text and a full-featured word processor. It's fast, efficient, and has a clean, uncluttered interface. It's also great for cleaning up text which is transmitted over the Internet." This shareware is available for Macintosh in English, German, French, and Japanese. Previous versions in Spanish, Italian and Danish are also offered.

### **Textaloud MP3**

<http://www.nextup.com/TextAloud/download.html>

Nextup's TextAloud MP3 v1.05 is a text-to-speech program that reads aloud and can save audio to .wav or .mp3 files for later listening. This easy-to-use system is great for convenient reading of files and especially for conversion of files into formats that could be transferred to a portable MP3 device, although conversion can be slow. Available for Windows.

*Commercial Software. (Commercial programs offer greater functionality and better customer support in exchange for their higher cost. The publishers of the three programs listed here allow purchasers to download a demo version from the Internet that will work for a limited time period. After that, users must purchase the software to continue using it.):*

### **CAST eReader**

<http://www.cast.org/udl/CASTeReader211.cfm>

CAST e-Reader is a software tool designed to support learners of all ages who may lack the skills needed to read materials independently. The software can take electronic text content from any source and read it using synthesized speech and synchronized visual highlighting. The program's universal design feature allows it to meet a wide range of needs, abilities and interest, supporting those who have difficulty reading. Available in both Macintosh and Windows versions for grade 3 to adult.

### **Kurzweil 3000**

<http://www.kurzweilededu.com/>

The Kurzweil 3000 has a host of features in addition to its capacity to pronounce text aloud while simultaneously highlighting the word being spoken on the screen. It can drive a scanner to scan text into the computer, and then convert the scanned image into digital text that can be spoken aloud, edited, and saved. Word prediction, web access, a dictionary, and study aids are also included.

### **Read & Write Gold**

<http://www.texthelp.com>

TextHelp, now known as Read & Write Gold, is a text-to-speech software program available in Windows format for users grade 2 to adult. It includes numerous features in addition to the ability to read text aloud including: a talking calculator, ability to save text as MP3 files, speaking phonetic spelling checker, support for web searches, and the capacity to drive a scanner to convert printed material into digital text.

### **WYNN**

<http://www.freedomscientific.com/WYNN/index.asp>

WYNN, an acronym for "What You Need Now", also allows users to scan text into the computer using a scanner, then convert that text into a digital form that can be read aloud. It has built-in E-mail, word prediction, outlining mode, text highlighting, bookmarking, and a dictionary. Also included is the capacity to selectively block visual elements on web pages, reducing visual clutter.



## *eText Sources*

The following online sources for digital texts are of three basic types. Some are free use sites, where individuals or schools can download copies of classics that are no longer covered by copyright laws because they are more than 70 years old. Others are commercial sites that have relationships with copyright holders and sell digital materials to the public. The third type of site distributes digital text only to individuals who have a print-based disability, such as blindness or dyslexia, under the authority of the Chafee amendment to U.S. copyright law. Information on the Chafee Amendment may be found at <http://loc.gov/nls/reference/factsheets/copyright.html>

### **Abacci Books**

<http://abacci.com/books/default.asp>

Project Guttenberg meets Amazon – free digital text versions of classic literature – with reviews.

### **Audible**

<http://audible.com>

Audible's broad collection of audio books, audio magazines and daily audio digests of leading newspapers from more than 100 content providers will be available for seamless PC-based playback using the Windows Media Player, representing a significant addition to the listening options available to users of Windows Media. In addition, downloaded programs are played back through the Audible MobilePlayer or MobilePlayer-Plus, 3.5 ounce, handheld playback peripherals, or through a computer's sound system.

### **Bartleby.com**

<http://www.Bartleby.com>

Bartleby.com houses an online collection of copyright-free books that come with navigational and cross-referencing tools. E-book versions for personal computers or handheld devices can be downloaded from \$1 per title.

### **Electric Library**

<http://www.elibrary.com/>

Electric Library contains only copyrighted content from reliable sources. Electric library will deliver full-text documents from "natural language" inquiries. Search strings are automatically spell-checked, and the reading level of each document is noted. Sources include magazines and newspapers like TIME, U.S. News & World Report, People, The Economist, Sports Illustrated, USA Today, and The Los Angeles Times; and scholarly journals like the Journal of Social History, Journal of Social Psychology, American Demographics, Journal of Economic Issues, and the Journal of Educational Research. A commercial site, but a very strong resource for students.

### **Follett Software Company**

<http://www.fsc.follett.com>

Follett Software Company now offers e-books through a partnership with netLibrary. Users can pull up MARC records and preview netLibrary books and materials for free. Just as with a printed book, an e-book that a school library purchases can be "checked out" to a device until the circulation period runs out, at which point it disappears from the device and is available for electronic circulation again.

### **Franklin Free Library**

<http://www.franklin.com/freeLibrary/>

With an eBookMan you can access the Franklin Free Library. Search the Franklin Free Library for thousands of free titles for eBookMan. Free text and HTML files can be read in the Franklin Viewer



application. Select titles are also available for purchase as are Franklin Reader ebooks, which means they are searchable, require less memory, and offer additional features such as the ability to place bookmarks.

**Galaxy Library**

[http://www.galaxylibrary.com/\\_3](http://www.galaxylibrary.com/_3)

Galaxy Library offers free and fee books in many electronic formats: Adobe PDF, Everybook, Glassbook, GoReader, HTML, ION (eMonocle), MS Reader, Open Ebook, Palm, Pint Copy, and WindowsCE.

**Project Guttenberg**

<http://promo.net/pg/>

The Project Guttenberg philosophy is to make information, books and other materials available to the general public in forms a vast majority of the computers, programs, and people can easily read, use, quote and search.

**Rosetta Books**

[www.rosettabooks.com/](http://www.rosettabooks.com/)

RosettaBooks claims to be the leading electronic publisher of quality backlist books focused exclusively on the electronic medium. RosettaBooks delivers content in a range of e-book formats compatible with all emerging e-book platforms. MS Reader, Acrobat eBook Reader, Adobe PDF, Gemstar REB1100, Gemstar REG1200, Peanut for Palm, Peanut for P.P.C., Night Kitchen TK3.

**TeleRead**

<http://teleread.org/>

“Teleread is a non-partisan plan to get electronic books into American homes – through a national digital library and small, sharp-screened computers – in an era of declining literacy. Many educators and librarians love the idea of a national digital library full of electronic books, but they wonder if the business community would object to the tax money spent. The answer is: TeleRead would actually benefit business by massively popularizing the use of electronic forms, and driving down the cost of processing the paperwork of consumers. The same machines that were ideal for e-books could excel for e-forms. And business is starting to catch on to the benefits here.”

**The Alex Catalogue of Electronic Texts**

<http://www.informotions.com/alex>

A collection of digital documents collected in the subject areas of English literature, American literature, and Western philosophy.

**The Children’s Literature Web Guide**

<http://www.acs.ucalgary.ca/~dkbrown>

“An attempt to gather together and categorize the growing number of Internet resources related to books for children and young adults. Much of the information that you can find through these pages is provided by others: fans, schools, libraries, and commercial enterprises involved in the book world.”

**The Library of Congress**

<http://lcweb.loc.gov>

This list is not meant to be comprehensive. The resources listed provide a wealth of information on the state of digital libraries today.



### **The National Academy Press (NAP)**

<http://www.nap.edu/>

Created by the National Academies to publish the reports issued by the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council, all operating under a charter granted by the Congress of the United States. The National Academy Press is the first publisher to provide its books entirely on-line, in full text format.

### **The Online Books Page**

<http://www.ul.cs.cmu.edu/>

A directory of books that can be freely read on the Web, plus an index to thousands of online books and text archives.

### **The Texas Text Exchange (TTE)**

<http://tte.tamu.edu/>

A consortium of disability service providers who share electronic texts (e-texts) with each other. These e-texts are used to accommodate students with disabilities. The TTE also provides information on the creation and use of e-texts. The TTE maintains an online digital library of e-texts, accessible only by TTE consortium members.

### **University of Virginia's Electronic Text Center**

<http://etextlib.virginia.edu/>

The Electronic Text Center provides access to over 5,000 texts (1,200 of these are available for the Microsoft Reader format), including British and American fiction, children's literature, and books on American history.

### **WebCT**

<http://www.webct.com/>

WebCT is "courseware", a delivery system for Internet-based curriculum, assignments, assessment, etc. and has developed strategic content agreements with the following publishers: Pearson Education, including Addison Wesley Longman, Allyn & Bacon, Prentice Hall and Pearson Professional, Reference and Technology imprints; Thompson Learning, including its publishing companies Brooks/Cole, Course Technology, South-Western College Publishing, and Wadsworth Publishing; Archipelago; Bedford, Freeman & Worth Publishing Group, Cambridge Physics Outlet; Harcourt College; John Wiley & Sons; McGraw-Hill Ryerson and W.W. Norton & Company Inc.

### **WizeUp**

<http://www.WizeUp.com/>

Digital textbooks are professor-required, publisher-endorsed content. Textbooks are supplied with the "WizeUp" application that features note-taking inside the book with full search, sort and print capability, an integral highlighter, the ability to bookmark hyperlinks to the book, the Web, instructor notes, multimedia and more. Collaborating publishers include Wiley, Norton, Harcourt, Addison-Wesley Longman.

## ***Voice Recognition Software***

### **Naturally Speaking**

<http://scansoft.com/naturallyspeaking>



**ViaVoice**

<http://www-3.ibm.com/software/speech>

ViaVoice products are available through ScanSoft.

*Inexpensive Portable Word Processors*

These relatively inexpensive machines are best used for draft writing, library work, or writing on the go. They all have full keyboards suitable for touch typing or keyboarding instruction, and some include keyboarding practice programs. Editing and revision are difficult on their small screens, but any of them can easily transfer text to either Macintosh or Windows computer for revision, editing, and formatting.

**AlphaSmart**

<http://www.alphasmart.com>

**Dreamwriter**

<http://www.brainium.com>

**Laser PC6**

<http://www.perfectsolutions.com/pc6f.asp>

*Other Resources*

**Books on Tape**

<http://rfd.org>

Recoding for the Blind and Dyslexic (RFB&D) was founded in 1948 to provide audio versions of books for the blinded WWII veterans. Since then, they have grown into the largest provider of audio books for individual who are blind or dyslexic, serving 116,000 members worldwide. Their library of recordings new contains more than 93,000 volumes, which are provided on specialized audio tapes requiring a specialized player. In addition to this, they have recently initiated a new service, providing some books on digital audio CDs.

20 Roszel Road

Princeton, NJ 08540

866-RFBD-585

**Wizcom Superpen Voice**

<http://www.wizcomtech.com/>

This portable, pen-sized device will read text aloud, as well as store it for future downloading to a computer. It is somewhat slow, but it does work.

**Draft:Builder**

**Write:OutLoud**

**Co:Writer 4000**

<http://www.donjohnston.com>

Don Johnston Incorporated is a supplier of hardware and software designed to aid individuals with a range of special needs. Of particular use to individuals who struggle with writing are three programs designed to support planning prior to writing, allow students to hear what they have written read back to them by the computer, and offer writers suggested spelling of words they are about to write through the use of a powerful word prediction algorithm.



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