

# Assistive Technology for Individuals With Learning Disabilities

## Through the Lens of the *Occupational Therapy Practice Framework: Domain and Process*

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**ABSTRACT**

Occupational therapists and occupational therapy assistants use a variety of intervention methods when serving clients with learning disabilities. Interventions commonly address performance skills and client factors. Compensatory approaches using assistive technology can also be very effective. The *Occupational Therapy Practice Framework: Domain and Process* (American Occupational Therapy Association [AOTA], 2002) is effective in guiding occupational therapy services. To effectively provide assistive technology services to clients with learning disabilities, occupational therapists and occupational therapy assistants need to be knowledgeable about some of the challenges clients with learning disabilities may face, as well as the different technologies available and their features.

**LEARNING OBJECTIVES**

After reading this article, you should be able to:

1. Recognize how the *Occupational Therapy Practice Framework: Domain and Process* can be used to support and clarify the use of assistive technology for students with learning disabilities.
2. Recognize identifying characteristics of learning disabilities.
3. Identify the definition and characteristics of assistive technology.
4. Identify steps used during the evaluation process to determine whether assistive technology may be appropriate for an individual with a learning disability.
5. Identify features of assistive technology products that may aid a client to overcome difficulties with reading, writing, or organization.

**INTRODUCTION**

Occupational therapy is a health care profession that focuses on "occupation and daily life activities and the application of an intervention process that facilitates engagement in occu-

pation to support participation in life" (AOTA, 2002, p. 609). Clients with learning disabilities often have difficulty engaging in occupations and daily life activities. Occupational therapists and occupational therapy assistants use a variety of interventions when providing services to individuals with learning disabilities (AOTA, 1998a).

Occupational therapy has historically used assistive technology in the provision of services (AOTA, 1991a). However, technology has changed dramatically in recent years. It includes, but is not limited to, computer hardware and software, printers, scanners, and the Internet (AOTA, 1998b).

Occupational therapist and occupational therapy assistants should be guided in their practice by a conceptual system (Pedretti, 1996). This system should provide the theoretical base and guide the decision making process when providing interventions. In 2002, AOTA published the *Occupational Therapy Practice Framework: Domain and Process* (Framework), which "outline[s] the process of occupational therapy evaluation and intervention" (p. 609).

This article discusses the use of assistive technology by occupational therapists and occupational therapy assistants as a type of occupational therapy intervention when providing services to clients with learning disabilities. The Framework will be used as a guide.

**DEFINITIONS****Learning Disabilities**

There are several definitions of *learning disability*. In the *Diagnostic and Statistical Manual of Mental Disorders* the American Psychiatric Association (1994) defines it as follows:

Learning disorders are diagnosed when the individual's achievement on individually administered, standardized tests in reading, mathematics, or written expression is substantially below that expected for age, schooling, and level of intelligence. The learning problems significantly interfere with academic achievement or activities of daily living that require reading, mathematical, or writing skills. (p. 46)

The Individuals With Disabilities Education Act, reauthorized in 1997, defines learning disability as "...a disorder of one or more of the basic psychological processes involved in understanding or in using spoken or written language, which



may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.”

Different states and agencies, including different school districts, have their own definitions of what constitutes a learning disability. However, when defining *learning disabilities*, it is generally recognized that there is a discrepancy between academic achievement and the apparent capacity to learn (AOTA, 1998a). It is possible for a client with above-average intelligence to be diagnosed with a learning disability.

Some terms commonly associated with learning disabilities include dyslexia, dysgraphia, dyscalculia, dyspraxia (apraxia), auditory processing disorder, visual processing disorder, and attention deficit (hyperactivity) disorder (National Center for Learning Disabilities, n.d.).

### Assistive Technology

The Technology-Related Assistance for Individuals With Disabilities Act of 1988 (The Tech Act) defines assistive technology as “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.” The Tech Act continues to define assistive technology services as “any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device.”

For the purposes of education, the Individuals With Disabilities Education Act (IDEA) similarly defines assistive technology devices and services. The reauthorization of IDEA in 1997 requires considering assistive technology for all students who are identified as having a disability as part of their individualized education program (IEP). The Americans With Disabilities Act of 1990 requires that reasonable accommodations be made for individuals in the workplace.

Because most people do not outgrow learning disabilities (Gerber & Reiff, 1994), tools or compensation strategies may provide them with methods to accomplish the desired task. Assistive technology can enable an individual to access the learning process (Raskind, 1998). By design, assistive technology is intended to compensate or work around a difficulty. Although it is not intended to remediate, some assistive technology has been found to have a side effect of building skills related to the difficulty (Higgins & Raskind, 1995). Often, assistive technology is used as a tool to enable the client to build skills (e.g., typing spelling words instead of handwriting works on the skill of spelling). Assistive technology can provide the opportunities for a client to overcome barriers that inhibit skill building.

Although assistive technology may be implemented for a case, further remediation of the difficult skill should continue to be considered. For example, if the client types written expression due to illegible handwriting, remediation of the client's handwriting should continue to be considered.

### OCCUPATIONAL THERAPY PRACTICE FRAMEWORK: DOMAIN AND PROCESS

#### Traditional Occupational Therapy Intervention for Clients With Learning Disabilities

By far, the most likely setting for occupational therapists and occupational therapy assistants to find themselves working with clients with learning disabilities is school systems. The most common interventions address the *performance skills* (*coordination, strength and effort, temporal organization*) and *client factors* (*perceptual functions, energy and drive functions, attention functions, sensory functions, pain*). For example, occupational therapy may address fine motor skills or visual perceptual skills through the use of therapeutic activities, which may help improve a student's writing and reading abilities. Sensory integration therapy is often used to treat clients with learning disabilities to address sensory as well as perceptual functions (AOTA, 1991b; AOTA, 1998a).

In addition to addressing *performance skills* and *client factors*, occupational therapists and occupational therapy assistants may use a *compensatory* approach by making changes to the *physical context* to enable a client with *attention* deficits to be less distracted, or change the *temporal context* by providing students more time to complete assignments.

Another compensatory approach is to use assistive technology to overcome or bypass difficulties with *performance skills*. For example, a word processor may be used by someone who cannot write legibly.

#### A Framework Approach for Using Assistive Technology for Clients With Learning Disabilities

##### Areas of Occupation Affected By Learning Disabilities

**Instrumental Activities of Daily Living (IADL).** Clients with learning disabilities may have difficulty in some or all of the activities of reading, writing, and arithmetic. This can present them with numerous obstacles in the area of IADL. For example, clients with reading deficits may have difficulty with *community mobility* (using public transportation) because they are unable to read bus schedules. If clients have difficulty with writing or arithmetic, they may have difficulty with *financial management* (not be able to write checks to pay bills or to shop independently).

**Education.** The effects of learning disabilities on the area of education is clear. These effects include clients at all levels of education, from kindergarten through those completing postgraduate work or taking classes for *leisure*. Learning disabilities may affect their *formal education participation* (performance in math, reading, and writing) and their *exploration of informal personal educational needs or interest* (ability to independently find information on topics that may be of interest to them).

**Work.** Work includes both paid employment and volunteer work (AOTA, 2002). Clients with learning disabilities may

have difficulty performing various job functions and may limit their *employment interests and pursuits* (employment options when seeking employment). They may have difficulty with *employment seeking and acquisition* (unable to fill out an employment application, complete a résumé, or successfully take an entrance examination). Even in jobs that are typically not associated with reading and writing, it is nearly impossible to completely avoid reading and writing in the workplace, which may affect their *job performance* (ability to complete assigned work).

**Leisure.** Leisure is an intrinsically motivating activity that is not obligatory (AOTA, 2002). Many people take for granted the ability to read books or correspond with friends and family with either e-mail or postal mail (*leisure participation*). Persons with learning disabilities may struggle with all these activities. They may also have difficulty with or the inability to read travel guide books (*leisure exploration*).

\* \* \*

Learning disabilities can affect *performance* in all *areas of occupation*. The following discussion may appear to only address the area of *education*, but the same *process* can be used with all clients with learning disabilities, whether addressing difficulties in the *areas of work, play, leisure, IADL, or social participation*.

The Framework process has three components: *evaluation, intervention, and outcomes* (AOTA, 2002). The *evaluation* is composed of an *occupational profile* and an *analysis of occupational performance*. The occupational profile is where the client's needs, interests, values, and "concerns about performing occupations and daily life activities are identified" (AOTA, 2002, p. 614). The *analysis of occupational performance* is where the client's "assets, problems, or potential problems are identified," as well as things that support or hinder performance. "*Performance skills, performance patterns, context or contexts, activity demands, and client factors* are all considered" (p. 614).

After going through the evaluation with clients who have a learning disability, you may learn that they realize they have a need to succeed in school, but they are concerned that they will again fail; that they enjoy playing computer games; and that they have difficulty with spelling and grammar but are able to clearly articulate their thoughts. With this information, the evaluator and the client can identify targeted *outcomes*. For example, in this scenario, the client may desire the ability to complete written work at the same quality level as his or her classmates; the client would like to use a computer and wants to be able to put thoughts and ideas down on paper.

"The *intervention process* is divided into three sub-steps" (AOTA, 2002, p. 617): the *intervention plan, intervention implementation, and intervention review*. During this process, the results of the evaluation are integrated with theory and evidence and combined with clinical reasoning to develop a plan that the occupational therapist

and occupational therapy assistant carry out. The *intervention plan* is based on the client's priorities. *Interventions* are designed to address the hindrances that were discovered during the evaluation and enable the client to reach the targeted outcomes. During the *intervention planning process*, the occupational therapist and the occupational therapy assistant, based on established competencies and under the supervision of the occupational therapist, develop the plan. The plan should include objective and measurable goals, an occupational therapy intervention approach based on theory and evidence, and the mechanisms for delivery of services. The *intervention implementation* is where the plan is put into action. This is where the type of occupational therapy *intervention or interventions* are determined and carried out.

In the example of the client with learning disabilities, the *intervention plan* could have the following goals: 1. Client will independently complete levels 1–10 in a computer-based typing game in 5 weeks. 2. Client will independently use a word prediction program to write journal entries with 80% accuracy in 10 weeks. This plan uses the *compensation and adaptation* approach (AOTA, 2002). During *implementation*, the type of occupational therapy interventions include the *occupation-based activity* of playing a game on the computer, which is also a *purposeful activity*, as is the use of the word prediction program. Implementation may consist of the occupational therapist or occupational therapy assistant teaching the client and the school staff who work with the client how to use the software, and following up on a weekly or biweekly basis to track progress, which would constitute the *intervention review*.

The next step is the *outcome process*. The *outcome* measures should have been established at the beginning, during the *occupational performance* section of the *evaluation process* (AOTA, 2002). With the above client, the *outcomes* would include *occupational performance (improvement and enhancement in education)*, *client satisfaction* (the client is satisfied that the writing is improving in both speed and quality), and *role competence* (the client is more on par in his *role* as student) (AOTA, 2002).

Although the term *assistive technology* is not explicitly mentioned, it is clearly implied (Boss, 2003). After the concepts and terminology of the Framework are understood, it can be very useful in the assistive technology environment.

## CATEGORIZATION OF ASSISTIVE TECHNOLOGY FOR LEARNING DISABILITIES

The types of assistive technology for clients with learning disabilities can be organized by the skills a client with learning disabilities finds difficult. Some technologies can be applied to more than one skill and will be listed under more than one skill. A list of the different categories and examples of corresponding assistive technology products is included in Table 1 on page CE-4.



**Table 1. Sample Assistive Technology Solutions**

Category	Technology	Contact information
<b>WRITING</b>		
1. Word processors	AlphaSmart .....	www.alphasmart.com
	AppleWorks .....	www.apple.com
2. Spell checking	Microsoft Word .....	www.microsoft.com
	Franklin Electronic Dictionary .....	www.franklin.com
3. Proofreading programs	Read&Write .....	www.texthelp.com
	Write:OutLoud .....	www.donjohnston.com
4. Outlining/Organizing	(Most major word processors)	
	CorrecText in Microsoft Word .....	www.microsoft.com
5. Abbreviation expansion	Grammatik in WordPerfect .....	www.wordperfect.com
	Draft:Builder .....	www.donjohnston.com
6. Speech recognition	Inspiration/Kidspiration .....	www.inspiration.com
	OmniOutliner .....	www.omnigroup.com
7. Text to speech/Screen reading	Macro Express .....	www.macros.com
	Microsoft Word AutoCorrect .....	www.microsoft.com
8. Word prediction	As-U-Type .....	www.asutype.com
	Dragon NaturallySpeaking .....	www.scansoft.com
	IBM ViaVoice .....	www.scansoft.com
	iListen .....	www.macspeech.com
	Aurora Echo .....	www.aurora-systems.com
	eReader .....	www.cast.org
	Narrator—	
	Microsoft Windows feature .....	www.microsoft.com
	Spoken Item—Mac OS feature .....	www.apple.com
	WordQ .....	www.wordq.com
	Write:OutLoud .....	www.donjohnston.com
	Aurora Prediction .....	www.aurora-systems.com
	Co:Writer .....	www.donjohnston.com
	Microsoft Word—	
	AutoText feature .....	www.microsoft.com
	Read&Write .....	www.texthelp.com
	WordQ .....	www.wordq.com

**READING**

1. Text to speech/Screen reading See "writing" section
2. Reading systems Kurzweil 3000 .....www.kurzweiledu.com  
Read&Write .....www.texthelp.com  
Reading Pen .....www.readingpen.net  
WYNN .....www.freedomsscientific.com
3. Variable speech control  
tape recorders/  
CD players American Printing House for the Blind ....www.aph.org  
Reading for the Blind and Dyslexic .....www.rfbid.org

**ORGANIZATION/MEMORY**

1. Personal data managers Parrot—Voice Mate .....www.voice-assistant.com  
Palm handhelds .....www.palm.com
2. Free-form databases askSam .....www.asksam.com  
NoteBook .....www.circusponies.com

**LISTENING AND AUDITORY PROCESSING AIDS**

1. Personal FM listening systems Easy Listener .....www.phonicear.com  
(Large variety) .....Office supply/Electronics stores
2. Tape recorders

**MATH**

1. Talking calculators (Large variety).....www.maxiaids.com
2. Digital measurement instruments Speaking and digital tape measures .....www.maxiaids.com  
Digital thermometer .....Medical supply/Pharmacy
3. Math word processors Equation Editor—  
built-into Microsoft Word .....www.microsoft.com  
MathPad .....www.intellitools.com  
Scientific Notebook .....www.mackichan.com

Adapted from *Functional Evaluation for Assistive Technology*, by M. H. Raskind & B. R. Bryant, 2002, Austin, TX: Psycho-Educational Services.

This table provides a small sample of available products and does not imply product endorsement.

Web sites are constantly changing. If the links are not working, an Internet search should provide newer working links.

**Written Language**

Several skills are required for successful production of written expression, including, but not limited to, fine motor skills, visual perception, recall and association of phonetics, planning, and idea organization. Additionally, individuals with learning disabilities may be less motivated to produce written language due to a history of unsuccessful writing and resulting criticism (Raskind, 1993). However, by using it to support the writing process, the individual may find the

technology a source of motivation for writing (Wood & Masterson, 1999).

**1. Word processors.** Use of a word processor can enable a client to write without being overly concerned about making errors because these can be easily corrected before printing (Higgins & Raskind, 1995). A client who has difficulty with legibility when handwriting may be able to use a word processor to produce legible written expression.

**2. Spell checking.** The use of this technology enables clients to compare the words they have spelled to a list of words in a dictionary. For words that do not match, a list of possible words can be presented and, with some software and devices, read aloud to the client.

**3. Proofreading programs.** These tools are used to indicate and correct possible errors in punctuation, capitalization, grammar, homonyms, and sentence structure. Dictionaries, thesauruses, and tutorials are often included. Although typical users may not use many of the suggestions made by these programs, for a client with a learning disability they can be indispensable.

**4. Outlining/Organizing.** These features are included in several word processors, and there also are specialized programs to assist in the outlining and organizing process of writing. The outline can be presented as a diagram, also called an "idea map" or semantic webs, that can be color coded, presented as shapes and images, or arranged in some other way to facilitate the organization process. This presentation of information can enable some clients with learning disabilities to more easily organize and brainstorm ideas.

**5. Abbreviation expansion.** Abbreviation expansion allows a client to associate a few letters with a longer word or phrase. This may enable a slow typist or someone who has difficulty spelling a frequently used word to type more quickly. For example, the client could type *atd* and the phrase *assistive technology device* would appear.

**6. Speech recognition.** With speech recognition, a client speaks into a microphone, then the computer translates the spoken words into typed text or commands. This technology may be particularly useful to clients whose oral skills exceed their written language abilities. Although older speech recognition technology required the client to pause between each word (discrete speech), recent speech recognition technology does not require such pauses (continuous speech) and has begun to insert some punctuation. However, some clients are more successful using discrete speech recognition because it provides a list of choices after each word is spoken. Sometimes a client with a learning disability will recognize words that he or she cannot spell. If the software incorrectly recognizes a word, the client may select the correct word from the list.

**7. Text to speech/Screen reading.** This technology will read aloud letters, words, or sentences as they are typed, or afterwards as part of the review process. The voice quality and reading speed can be altered to the client's preferences. Clients with learning disabilities may be able to use this technology to detect errors in grammar, word usage, punctuation, spelling, and readability.

**8. Word prediction.** This technology is used with a word processor to "predict" the word the client is typing based on spelling, syntax, and frequency of use. Some software allows the client to hear the list of suggested words, an important feature for clients who struggle to visually recognize the correct word in a list. Some software predicts words based on

phonetic, in addition to dictionary, spelling. This feature may benefit clients with significant spelling difficulties by enabling them to select the correct word phonetically.

## Reading

Difficulties with reading that can be compensated with assistive technology include visual motor, visual processing, decoding, tracking, and attention. Generally, individuals who benefit from assistive technology for reading exhibit little difficulty with comprehension when the information is presented orally or when combined with the dual modality of visual and auditory feedback (Hecker & Burns, 2002).

**1. Text to speech/Screen reading.** An individual may use this technology to read aloud any text that appears on the computer screen, including tutorials, electronic books, Web pages, e-mails, and error messages. It is available as specialized software or in some newer operating systems.

**2. Reading systems.** Reading systems are useful when a client needs printed text to be read aloud. The client uses software on a computer and a scanner. Using the reading system software, printed text is scanned into the computer and converted to electronic text through a process called optical character recognition. The reading system's software can then change the visual presentation of the text (e.g., background color, font size, word spacing) and read the text aloud while highlighting the words as they are spoken. A simplified, portable device about the size of a large highlighter is also available and can be used for reading individual words or lines of printed text.

**3. Variable speech control tape recorders/CD players.** A large number of books, journals, and other text have been recorded to audiotape by organizations, such as the Library of Congress and Reading for the Blind and Dyslexic. Some clients may benefit from slowing the auditory presentation of the material. Variable speech control tape recorders enable the playback speed to be changed without altering the sound quality. Some organizations have begun to use CDs and specialized CD players with variable speed control.

## Organization/Memory

Many individuals may benefit from assistive technology to help with organizing schedules, appointments, to-do lists, names, addresses, telephone numbers, and memos. An alarm or reminder for these items may also benefit individuals with learning disabilities.

**1. Personal data managers.** This technology could be used as software on a personal computer or as a handheld device. Information can be inputted or retrieved by keyboard or stylus. Some devices can read the information aloud. Alarms or reminders can be set to alert the user by visual display, auditory signal, or vibrating alert. Search functions enable the client to find information across all data.

**2. Free-form databases.** This software is used with a personal computer and enables a client to record information in a



nonstructured method, similar to the use of Post-It notes. The information can then be organized and easily searched.

### Listening and Auditory Processing Aids

Individuals who have difficulty processing information that is presented auditorily or who are easily distracted may be able to use this technology to compensate.

**1. Personal FM listening systems.** These systems consist of two parts: (a) a microphone and transmitter directed at the speaker, and (b) a headset or earphone and receiver worn by the listener. Clients who have difficulty focusing on a speaker may be able to use this technology to amplify the speaker's voice and reduce external sounds to assist with attention.

**2. Tape recorders.** These devices can be used to record lectures in place of or in addition to taking notes. The client can review the lecture afterwards or listen to the lecture multiple times. Tape recorders may assist clients who have difficulty with attention, note taking, or auditory processing.

### Math

Difficulties with math that can be addressed by assistive technology can be due to writing difficulties, visual processing, or visual motor deficits. Reading measuring instruments, copying information from device to paper, and writing math symbols or graphs can be addressed with assistive technology.

**1. Talking calculators.** This technology may enable clients to check their accuracy as they do computations and copy the resulting answers to paper.

**2. Digital measurement instruments.** Some clients with a learning disability have difficulty determining the correct reading from the series of small hash marks on a measuring instrument. Many instruments, such as thermometers and tape measures, are becoming available with digital displays in place of reading marks. Some instruments can read the measurement aloud or be connected directly to a computer to eliminate errors in transcribing the readings.

**3. Math word processors.** Some word processors have a feature to write math symbols, or specialized programs can be used to write any math symbol or produce a graph. This technology enables clients to keep math work in alignment, improve legibility, or accurately produce graphs.

### CASE EXAMPLE

Robbie is a 12-year-old boy with a learning disability. He was referred for an evaluation to determine whether technology could assist him with written expression. He had difficulty in the area of *formal education participation*. The *occupational profile* revealed that he disliked school, especially anything that involved reading or writing. He reported that he performed writing tasks at school and home, but it took him a very long time to finish and he made many errors, leaving him frustrated. He is fully included in a regular education class and concerned that he cannot keep up with his classmates. He *values* school and wants to do well. Robbie's *pri-*

*orities* were determined, and finding a more effective method of writing was at the top of the list. This goal would also help him keep up with his classmates.

The therapist completed an *analysis of occupational performance*. Robbie's *motor skills* were observed to be within functional limits in every aspect. He had good *communication and interaction skills* and was very pleasant and cooperative. He was very articulate and had good *voice and speech functions*. He tried to avoid schoolwork whenever he could, although the *cultural context* put pressure on him to do well in school. His *physical contexts*, home and school, were not equipped with computer systems, and he would probably need to use computer systems in both places. Robbie had difficulty with the *required actions* needed for writing. He appeared to have problems with *specific mental functions* such as *attention* and *perceptual function*, which may be associated with dyslexia and dysgraphia. A writing screening was conducted that compared his writing skills using different input methods.

Using pencil and paper, Robbie wrote the following spelling words: "waint, on, dog, mother, bluw." He misspelled "want" and "blue." His writing was legible but slow and labored.

Next, Robbie was given a picture as a writing stimulus and asked to type a story about it in 5 minutes. He typed and edited the following: "The boy is foing of the trey. Becus the branch brock"

Using the spell check and text-to-speech features of Don Johnston's Write:OutLoud software program, Robbie made the following corrections: "The boy is falling of the trey. Because the branch is broke."

Robbie's ability to dictate was assessed by having him dictate to the evaluator. He was shown another drawing and asked to "tell a story" about it. He dictated complete and complex sentences. He was then trained on the essential features of DragonDictate, a speech recognition program. This program uses discrete speech, requiring the speaker to pause between each word. This software was chosen over the more commonly used continuous speech recognition programs due to Robbie's difficulty with processing and correcting recognition errors. Robbie independently wrote the following using speech recognition: "This summer has gone good so far yesterday my friends and me went to the pool yesterday. And saw a scooter lying on the floor."

Although Robbie made grammatical errors, this program appeared to provide the opportunities to work on those skills. Robbie had few opportunities to develop grammatical skills with his current methods of written expression.

An *intervention plan* was made that recommended the following assistive technologies that *compensated* for Robbie's *missing functions*: a laptop computer to accommodate the *physical contexts*; DragonDictate to *compensate* for his writing difficulties; and TextAssist, a text-to-speech program, to *compensate* for his reading and editing difficulties.

The *intervention plan* included specific goals to ensure that he was making progress: training for Robbie, his parents, and the school staff in the use of the technology; and follow-up appointments to assess his progress. The *intervention implementation* included delivery and setup of the technology, provision of training, regular follow-ups by contacting his school's resource specialist, and less frequent follow-up from members of the assistive technology team who conducted the evaluation.

Approximately 1 year after receiving the assistive technology, Robbie wrote the following 600 word story (only portions are shown due to space constraints):

...When we got down to the beach there were some nice waves. A cool breeze was coming in from the whole Ocean and there was no overcast. Jennie was being careful to find a place to sit. So that she could find a place to sit and warm her self up before going in to the Water. We slowly went in...We then came back to land. We started making little sand castles. At that time a seal was in the ocean and heading toward the beach. It came in to land and was seen by a lady next to us....

As can be seen, his outcomes were achieved. He was now able to write not only as well as his classmates, but better than most. He demonstrated *occupational performance* (*improvement and enhancement in education*), *client satisfaction* (Robbie is satisfied that the writing is improving in both speed and quality), and *role competence* (Robbie is on par in his *role* as a student).

## CONCLUSION

Assistive technology can be very effective in enabling clients with learning disabilities to improve functional abilities. The Framework should be used to guide occupational therapists and occupational therapy assistants when providing assistive technology services. There are many different technologies available that address different areas of learning disabilities. The person providing occupational therapy services should be very familiar with the features needed to address those areas of difficulty, and should have a broad knowledge of the products available. ■

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## How To Apply for Continuing Education Credit:

1. After reading the article **Assistive Technology for Individuals With Learning Disabilities: Through the Lens of the Occupational Therapy Practice Framework: Domain and Process**, answer the questions to the final exam found on p. CE-8 by darkening the appropriate boxes in Section B of the Registration and Answer Card, which is bound into this issue of *OT Practice* following the test page. Each question has only one answer.
2. Complete Sections A through D of the Registration and Answer Card. If the Answer Card is missing from your issue, you may obtain a form online at [www.aota.org](http://www.aota.org) under Continuing Ed, Continuing Education Articles.
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5. Registration and Answer Cards for **Assistive Technology for Individuals With Learning Disabilities: Through the Lens of the Occupational Therapy Practice Framework: Domain and Process** must be received on or before **May 31, 2006**.

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## Final Exam

**Assistive Technology for Individuals With Learning Disabilities: Through the Lens of the Occupational Therapy Practice Framework: Domain and Process • May 10, 2004**

**Learning Level:** Intermediate

**Target Audience:** Occupational Therapist and Occupational Therapy Assistant

**Content Focus:** Category 1: Domain of Occupational Therapy, Areas of Occupation  
Category 2: Occupational Therapy Process, Evaluation and Intervention

The Registration and Answer Card can be found bound into this issue of the *OT Practice* following the test page, or on our Web site at [www.aota.org](http://www.aota.org) under Continuing Ed.

1. Assistive technology is designed to compensate and not increase skills.
  - A. True
  - B. False
2. Types of assistive technology that are not used to assist with writing are:
  - A. Screen readers
  - B. Personal FM systems
  - C. Abbreviation expansion
  - D. Word processors
3. According to IDEA:
  - A. Assistive technology assessments must be done at each IEP
  - B. Assistive technology does not have to be considered at each IEP
  - C. Assistive technology must be considered at each IEP
  - D. Assistive technology is only considered at triennial IEPs
4. Clients with learning disabilities may have difficulty with:
  - A. Reading
  - B. Writing
  - C. Mathematics
  - D. All of the above
5. Assistive technology may include:
  - A. A pencil grip
  - B. A standard word processor
  - C. A portable CD player
  - D. All of the above, if used to improve or maintain functional capabilities of individuals with disabilities
6. The *Occupational Therapy Practice Framework: Domain and Process*:
  - A. Does not mention the term *assistive technology*
  - B. Implies the use of assistive technology
  - C. Explicitly mentions assistive technology
  - D. A and B
7. The Framework process is composed of the following sections, EXCEPT:
  - A. Evaluation
  - B. Intervention
  - C. Outcomes
  - D. Reimbursement for services
8. Learning disabilities may affect performance in which areas of occupation?
  - A. Education
  - B. Work
  - C. Leisure
  - D. All of the above
9. Based on the Framework, which word(s) or phrase(s) can imply the use of assistive technology?
  - A. Compensation
  - B. Adaptation
  - C. Occupational profile
  - D. A and B
10. Based on the Framework process, when evaluating a client with learning disabilities for assistive technology needs, the first step is to:
  - A. Plan the intervention
  - B. Monitor the client's progress
  - C. Complete an occupational profile
  - D. Make referrals to other professionals as needed
11. Making a recommendation for assistive technology for a client with learning disabilities is what part of the Framework process?
  - A. Evaluation
  - B. Intervention
  - C. Outcomes
  - D. None of the above
12. Performance skills include:
  - A. Motor skills
  - B. Education
  - C. Process skills
  - D. A and C