Selecting Software for Students with Learning Disabilities

Contributing Authors
Ellen Cutler
High Tech Center Specialist
Santa Monica College

Sally Fasteau
Learning Disability Specialist
Los Angeles Harbor College

Marcia Krull
Learning Disability Specialist
Mt. San Jacinto College

Rebecca Stone
Acquired Brain Injury Specialist
Merritt and Alameda Colleges

Carol Toppel
Learning Disability Specialist
Mission College

Christine Tunstall
Acquired Brain Injury/Learning Disability Specialist
Mt. San Antonio College

Table of Contents

Introduction

In recent years, standardized assessment practices for identification of students with Learning Disabilities (LD) have been adopted by all California community colleges. This process has provided invaluable assistance in assuring that the unique educational needs of students with learning disabilities are identified and addressed.

In 1989 the California Community Colleges Chancellor's Office funded the development of the Computer Assisted Record-keeping and Scoring (CARS) program, a software tool intended to record and integrate findings from various LD assessment instruments. While it provided an excellent mechanism for assisting in the identification of students eligible for learning disabilities services, High Tech Center Training Unit (HTCTU) staff believed that information from CARS could also be used to match appropriate computer-assisted instructional software to the learning needs of students with a specific deficit or deficits. This guide is the product of those beliefs.

The HTCTU has been privileged to facilitate the efforts of a state-wide team of Learning Disabilities and High Tech Center specialists from the California community colleges in developing this guide. Its purpose is to provide instructors with the information necessary to evaluate the content and instructional effectiveness of any software program relative to the needs of a student with a learning disability.

Although specific computer-assisted instruction (CAI) software is identified, these programs should be viewed as prototypic examples rather than prescriptive recommendations. This guide is not intended to be a simple software "cookbook," but rather as the next step in the ongoing process of learning to identify and use educational software in specific, instructionally effective and creative ways. It is a part of the process of bringing technology into the classroom and education into the 21st century.

In consultation with California community college assessment testing specialists, subtests from the Wechsler Adult Intelligence Scale-Revised (WAIS-R), the Wide Range Achievement Test-Revised (WRAT-R), the Woodcock Johnson Psychoeducational Battery-Revised (WJ-R), and Degrees of Reading Power were identified as capable of yielding information about learning deficits which could be addressed by CAI. These identifiable deficit areas have been used as the organizational framework for this guide. Each deficit area has its own chapter which is divided into assessment and software sections.

The Deficit Areas

Fourteen deficit areas were divided into two broad categories, cognitive and achievement:

Cognitive

Long Term Retrieval
Short Term Memory
Processing Speed
Auditory Processing
Visual Processing/Perceptual Organization
Comprehension-Knowledge/
    Verbal Comprehension/Expression
Fluid Reasoning and Abstract Reasoning
Freedom from Distractibility

Achievement

Basic Reading Skills
Reading Comprehension
Basic Mathematics Skills
Mathematical Reasoning
Basic Writing Skills
Written Expression

The assessment section contains:

– brief descriptions of the tests (or test modules) used to assess a given cognitive or achievement area, and

– descriptions of the day-to-day effect such deficits are likely to have on the student's academic performance and ability to function in a college environment.

The software section contains:

– the instructional goals which the software must achieve in addressing the effects of the targeted learning deficit;

– a review of instructional considerations summarizing the wisdom, teaching experience, pragmatic skills and general working knowledge of the specialists who contributed to this guide and who have direct experience with CAI for the deficit area under discussion;

– a description of the software characteristics needed to work effectively with a particular learning deficit: e.g., instructional design, methodology, learning levels, information feedback, use of repetition, color, sound or graphics (note that in many instances description of the unique importance and use of a basic software characteristic is also included); and

– software examples providing specific titles of programs which demonstrate the characteristics of software required for a particular deficit area (note that in some instances no single title meets all of the requirements so a selection of program types, which together meet the requirements, has been assembled).

Special Considerations

Computer assisted instruction can be a useful and effective teaching/learning tool when incorporated properly into a larger array of instructional activities. Productive use of CAI requires the instructor to have a clear understanding of a specific instructional goal for a student and how the software she/he intends to use will support the achievement of all or part of that goal. Effective use of CAI, in general, requires an in-depth knowledge of each software program. In focusing on a deficit area, often the instructor may select only a single exercise from a larger program or a series of programs each of which meets some portion of the overall instructional goal.

The instructor must provide the student with an explanation of the purpose of the software, help students implement learning strategies, monitor progress, and make adjustments in program parameters and instructional goals as needed. Effective use of instructional software engages both instructor and student in a mutually rewarding teaching/learning experience.

We are not suggesting that deficits can, or will be, "fixed" through the use of software. Neither are we proposing that software be casually selected and used on the basis of a single subtest score. Deficits to be addressed by CAI should be carefully identified through combinations of tests and subtests (referred to as clusters by the WJ-R and Scales by the WAIS-R). As noted in the Woodcock-Johnson examiners manual, "Cluster interpretation minimizes the danger of generalization from the score for a single narrow behavior to a broad multifaceted ability." (pg. 24, WJ-R Cog. Examiners Manual)

Computer assisted instruction can provide highly specialized support for a wide range of students. We look forward to your comments and suggestions as you use this guide. The development of this text is an evolutionary process which will change as better technology becomes available and instructional methods are refined. We hope the first edition of the work will provide you with a useful tool for better utilizing the software resources you already have and for selecting new ones in the future.

General Guidelines

General Guidelines: Computer-Assisted Instruction

Determining the appropriateness of software for any given student or group of students requires many of the same skills instructors already use in evaluating instructional resources such as books, slides, video, handouts and audio tapes. Although the perception exists that evaluating software is very different from evaluating more traditional types of instructional media, in fact, the processes have a great deal in common.

The following guidelines provide instructors with the "ideal" general characteristics of instructional software. It is important to understand that the probability of finding a single software program which includes all of these characteristics is unlikely. More commonly, as with other resource materials, instructors will use portions of several programs to meet their instructional goals. When evaluating and comparing software, the instructor might use the following questions.

Organization

- Does the software provide a clearly defined set of goals and objectives and a series of activities or presentations which lead to their achievement?

- Does each module or lesson focus on a particular topic, idea, or lesson?

- Does the software provide an organizational structure that allows easy access to any exercise, example or instructional component?

- Does the program provide clear and simple instructions for students and instructors on-line and in an accompanying manual?

- Does the software provide a data collection mechanism that automatically captures pertinent information, allows for manual input, and displays, prints and stores (in graphs,

charts and text) cumulative data showing areas of student progress and difficulty?

- Does the program provide authoring components that are easy to use (for editing and entering new data)?

Methodology

- Does the software provide a broad perspective of different cultures through examples that include students and student interests of various ethnic and racial backgrounds?

- Does the software provide a variety of instructional formats and/or methods that take into account diversity in student learning styles?

- Does the software provide effective sequencing of information?

- Does the software link the presentation of new information to evidence of success with previous learning tasks?

- Are the quiz and review components linked to the program goals and objectives?

- Are the vocabulary, sentence structure and content of the software appropriate to the age group with which it will be used?

- Does the software provide relevant and up to date content material and exercises?

- Is the feedback provided by the software meaningful? Does feedback about incorrect responses provide useful information about the type of error, how to make corrections and how to proceed through the remaining material?

- Does the feedback support the learning process, promote further interaction with the software, and avoid using methods a student may find threatening, embarrassing, or intimidating?

- Does the software provide options for automatic or manual progression or regression through the hierarchy of content, as well as a variety of presentation styles, based on student responses?

Design

- Does the software use graphics, sound, buttons, etc. in ways which enhance (not distract from) the program's instructional objectives?

- Does the program incorporate screen designs and text display that are dynamic enough to be pleasing to the student's eye, sustain interest in the program and contribute to the instructional objective?

- Does the software provide control options that allow the student or instructor to set graphic, text, sound and motion attributes, such as color combinations, size of fonts, volume, and playback features?

- Does the program provide easy-to-use supportive materials and documentation for students and teachers such as manuals, activity sheets and handouts?

- Does the program provide maximum compatibility with system software and assistive computer hardware and software?