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Selecting Software for Special Education Instruction. Digest #439.

TEXT: Microcomputers are found in special education classrooms in steadily increasing numbers. How they are used depends in large part on the software selected for instruction. The amount of instructional software used on a typical school microcomputer is limited to three to four packages per machine (Blaschke, 1985). Teachers and administrators must decide which of the many products available are best for the special education students they serve.

Educators make two basic kinds of decisions when selecting software. The first is a program decision: "How will computers be used in the instructional process?" The

second is a product decision: "Is this product consistent with curricular goals?"

PROGRAM DECISIONS/INSTRUCTIONAL OPTIONS

Courseware is the term generally used for microcomputer software that supports direct instruction. Depending on the design and content, courseware can reinforce previously learned skills, present new subject matter, or require the use of problem-solving skills. To answer the question of how computers will be used to support the instructional process, it is necessary to consider the various options for computer-assisted instruction (CAI). CAI courseware is typically classified in four categories: drill and practice, tutorial, games, and simulation (Bialo and Erickson, 1985). Each format can be used effectively with special education students.

Courseware that reinforces previously learned skills or concepts is called drill and practice. It is the most common format, accounting for over half of all software used in schools. With drill and practice programs, it is assumed that the content of the lesson has been previously taught. The purpose of the software is to provide practice and reinforcement. For many special education students, repetition and reinforcement is a crucial step in mastering skills and concepts. The computer is well suited to presenting the practice students need while maintaining the attention to task that is so important for many handicapped learners.

Two common features of drill and practice are branching and feedback. Programs branch to easier or more difficult tasks depending on the student's response to the problems presented. Feedback cofirms correct responses and provides additional practice or explanation for incorrect responses.

Computer programs that teach new skills, concepts, or processes are called tutorials. Tutorial programs should be carefully reviewed to ensure that the content and presentation are appropriate for the learning style of the special education student. New instructional content needs to be presented in clear, logical, sequential steps. Examples and illustrations should be followed by opportunities for learners to apply and test their understanding of the content. A good tutorial package will include suggestions for follow-up or drill and practice activities away from the computer.

Some drill and practice and tutorial programs have a built-in instructional management feature that keeps track of student responses throughout the lesson. This feature provides valuable information for teachers who plan and monitor the student's individualized educational program.

Educational games and simulations are two kinds of problem-solving courseware. They may be used to introduce new skills or reinforce previously learned skills. Games use a contest format where the learner competes with the program or with other students. Learners apply accepted rules and principles to reach a goal. Simulations place

students in real life situations where they can test alternative solutions to a problem. Computer-based simulations are often used to present situations that are too difficult or dangerous to recreate and experience in real life. As students progress through the program they are called on to make choices and deal with consequences.

Problem-solving programs require learners to use a variety of skills and facts to complete the exercise. Feedback is usually informational. As the user creates and analyzes variations of the problem, information is provided that helps them to make better choices in subsequent trials. Problem-solving software is usually designed for use by two or more students working together. This feature can have academic and social benefits for handicapped students. Grouping students with complementary skills or strengths can enhance/promote learning by creating a peer-tutoring system.

In each of these CAI formats, the content of instruction is defined by the program. Another option for computer-based learning is to use the computer as a tool. Word processing and database programs are examples of the computer used as a tool. Unlike courseware, the content is unspecified. Instead the tool program provides a structure for organizing and manipulating information and the content of instruction is determined by the learner. For example, a word processing program may have features that permit the student with expressive language deficits to organize and complete a writing assignment independently.

PRODUCT DECISIONS

Once the purpose of computer-based learning has been determined, specific programs can be reviewed and selected. To answer the question of whether the product is consistent with curricular goals, it is necessary to determine how decisions about specific products will be made. Taber (1983) suggests that this process be conducted in two parts: external and internal. External processes involve collecting information about products and their effectiveness from outside sources. Perhaps the most useful information at this stage in decision making comes from other educators. Courseware reviews in computing journals and regularly published compendiums offer up-to-date opinions of new products. There are several resource groups that develop and disseminate product reviews specifically for special education. Information from these external sources helps to narrow down the choices.

Internal processes are those conducted in a school or district and usually involve a thorough examination of the individual courseware packages. The purpose is to determine how well a product matches instructional goals. Criteria, whether formal or informal, are necessary at this stage in the process. Reviewing guidelines developed by others is a good way to determine what questions to ask. Existing guidelines range from one-page checklists developed by teachers to validated evaluation forms developed by a product evaluation center like the Educational Products Information Exchange (EPIE).

Attention to both instructional and technical features of software are common to most evaluation processes. Decisions about computer-based learning for handicapped children should take into account the academic, physical, and computer-use demands placed on the learner. These demands may be weighted differently for different students. The academic demands of a program such as reading or vocabulary level may be crucial in selecting software for students with learning disabilities, while physical demands such as keyboarding may be the deciding factor with physically handicapped students.

Instructional features generally include characteristics such as curriculum match, learner objectives, soundness, accuracy and clarity of content, factual and grammatical correctness, academic and physical appropriateness for target learners, and support or supplemental activities. The goal in assessing these features is to determine how well a product meets the instructional needs of students. When evaluating drill and practice, tutorial, or problem-solving courseware, content features are of primary concern.

Technical features are generally those that relate to the computer as medium of instruction. The physical and computer-use demands placed on the learner are of primary concern. Programs should be easy to use, reliable, and free of programming errors. The presentation of information should be well placed and the instructions clear. Feedback should be informational rather than judgmental. Other characteristics to consider are technical quality, user control, and the use of the computer's graphics and audio capabilities.

The goal in assessing technical features is to determine how well the program uses the capabilities of the computer to present instruction. For most instructional courseware, satisfaction with technical features is secondary to content considerations. However, with tool programs like word processors, technical features usually take precedence.

Selecting software for special education instruction is a complex but important task. The software selection process should consider both program and product decisions.

FOR MORE INFORMATION

Bennett, R.E. "Evaluating Microcomputer Courseware: An Overview." SPECIAL SERVICES IN THE SCHOOLS 1 (1985): 17-28.

Bialo, E.R., and L.B. Erickson. "Microcomputer Courseware: Characteristics and Design Trends." AEDS JOURNAL 18 (1985): 227-236.

Blaschke, C.L. "Technology Trends in Special Education." T.H.E. JOURNAL 12 (1985): 73-77.

Taber, F.M. MICROCOMPUTERS IN SPECIAL EDUCATION: SELECTION AND DECISION MAKING PROCESS. Reston, VA: Council for Exceptional Children, 1983.

RESOURCES

THE 1985 EDUCATIONAL SOFTWARE REVIEW GUIDE, ICCE, University of Oregon, 1787 Agate Street, Eugene, Oregon 97403

THE EDUCATIONAL SOFTWARE SELECTOR (TESS '85) EPIE Institute, P.O. Box 839, Water Mill, NY 11976

CLASSROOM COMPUTER LEARNING DIRECTORY OF NEW EDUCATIONAL COMPUTER SOFTWARE, Classroom Computer Learning, 5615 West Cermak Road, Cicero, IL 60650

THE SPECIALWARE DIRECTORY, ORYX Press, 2214 North Central Avenue, Phoenix, AZ 85004

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