# SOFTWARE SELECTION AND EVALUATION:

## *Making Choices for Learning*

Selecting software—whether programs on floppy disks, CD-ROMs, or videocassettes (laserdisks)—is an exciting but imperfect science. Often a program that works well for one teacher falls flat for another. Personal teaching style, computer experience, and available preparation time all affect the use of software.

Even if a program is praised by others, ultimately only the individual teacher will determine its effectiveness in the curriculum. More important than buying the top 10 educational programs is training teachers to use innovative strategies that fully use the computer's unique strengths. Then they will be able to choose and use software effectively. Teaching strategies like cooperative learning and multiple intelligences can help teachers take full advantage of the unique power and possibilities of computers and software. After reviewing research on writing and computers, Valeri-Gold and Demming noted:

*. . . the most effective utilization of computer software in the basic writing classroom combines the best of writing instruction theory with a creative use of computer technology. Only well-informed, trained and caring composition instructors will help to bridge the gap between technology and humanity.*[1]

Although teachers are the key to successful use of even good software, they do need to select appropriate programs. New programs come out daily, making it impossible for classroom educators to evaluate all of them. By following basic guidelines, however, teachers will be able to make excellent software selections.

### Instructional Goals

Before selecting software, teachers must define their instructional goals and objectives. Do the goals emphasize lower-order thinking skills such as knowledge, comprehension, and application? Or do they stress higher-order thinking skills—analysis, synthesis, and evaluation? Will projects be developed individually or in cooperative groups? Will learning styles and multiple intelligences be considered? Is creativity a goal?

Once the teacher has set well-defined instructional goals and objectives, it is much easier to select appropriate software.

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### Instructional Strategies

Some teachers fear that computers will replace them. If a teacher can be replaced by a computer, he or she probably should be! Technology without appropriate guidance is empty and wasted. So instead of fearing that they will be replaced by computers, teachers need a new point of view. Rather than seeing themselves as expert dispensers of knowledge from the front of the room, they need to become "guides on the side" and fellow learners with their students. Software will be effective in classrooms where teachers have created a rich environment for learning.

### Types of Software

Simonson and Thompson[2] have identified five categories of software from which to choose. Each has specific purposes.

• *Drill and practice*—Not so long ago, this was called "drill and kill" because it was repetitive and boring. Now there are many interesting, well-designed programs that effectively teach knowledge (facts), comprehension, and application.

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• *Tool*—Application software includes word processing, database, spreadsheet, paint, and hypermedia programs that allow students to create original products.

• *Simulation*—These programs create realistic pseudo-situations in which the student assumes a role and must make decisions based on knowledge, application, synthesis, and evaluation. Students can "live" in other times or situations and safely "experience" and manipulate them.

• *Tutorial*—These carefully designed, self-paced learning programs allow learner control in a hypermedia environment. They give immediate feedback and knowledge about learner accuracy during and at the end of each session.

• *Problem solving*—This type of software poses problems at progressively difficult levels while challenging and helping students to solve them.

• *Reference*—Electronic encyclopedias, atlases, dictionaries, databases, the Ellen G. White CD-ROM, and Bible search programs are examples of the excellent resources available. These references help students to learn to access information, process it, and communicate their findings.

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*The author (pointing) demonstrates to several teachers at the Model Technology School how to use a laserdisk program.*

### Solving Budget Challenges

It's easy to feel overwhelmed when you are starting out with an empty computer and a small budget. But you don't need special software for each subject area or a unique program for every major unit. Fortunately, you can achieve great things even with limited resources.

When building a software library, start with good tool programs. In fact, your classroom could get by for quite a while with only an integrated program that includes a word processor, database, spreadsheet, and draw or paint software (e.g., *ClarisWorks* and *Microsoft Works*). Children's word processors and paint programs (e.g., *Kid Works II*) are excellent for the primary grades. Desktop publishing programs (e.g., *Student Writing Center* and *Creative Writer*) open up new possibilities for students to publish their work. These kinds of software span the entire curriculum and every grade level. They never wear out or lose their usefulness. They don't get boring and won't need to be put away with other cyclical instructional materials.

Other useful tool programs include hypermedia and multimedia programs (e.g., *Compel*, *HyperStudio*, and *LinkWay Live*), which allow students to create interactive presentations or classroom reports. Full presentation programs (e.g., *Astound*, *Persuasion*, and *PowerPoint*) enable students to make multimedia reports.

### Choosing Versatile Programs

Adaptability is an important consideration when selecting software. Create a software web, as suggested by Willing and Girard,[3] to define all the ways that a program can be used. Put the name of the program in the middle; then radiating out from the program, list the subjects being taught.

Under each subject, outline all the ways the program could be used. This will help ensure that the software chosen is versatile and cost effective. This process is particularly important when purchasing site licenses or software for computer labs.

Since keyboarding is now being taught at the elementary level rather than in secondary schools, K-8 teachers need to include good keyboarding software on their shopping list. Don't assume, however, that a computer program is all you need to teach touch typing! You must do the initial instruction and ongoing monitoring of students' posture, finger placement, and review. There is no substitute for a good teacher.

### Computer Specifications

Determine the computer specifications of both the school's computers and the desired software. Many of the new multimedia programs have high memory (RAM) and hard-drive space requirements. Video or sound cards may also be needed. This may make the multimedia program you have

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*Useful computer programs include ones that can reproduce pictures or text by use of a scanner.*

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selected incompatible with older computers. If much of the desired software will not run on the school's computers, it may be time to consider replacing them.

When selecting CD-ROMs and videodisks, make sure that the school's players will run the desired programs. Some of the new and more complex CD-ROMs will run better on the faster quad speed players. Make sure laserdisk players have a bar-code reader for Level I videodisks. This allows individual frame or videoclip selection. Also, be sure the equipment has an RS-232 port for a computer connection. When a computer controls the selection of images on the laserdisk, this is called Level III. (Level II is a combined computer and laserdisk player in one unit and is used only in industry.)

### Selection Strategies

With so many new programs constantly arriving on the market, teachers need to narrow the choices to a few of the best to personally evaluate. Professional magazines, including educational technology journals, offer helpful software reviews and recommendations. Also, be sure to talk to other educators who are using software successfully to find out what they use and how they integrate it into their instruction.

Yet just getting recommendations from others is not enough. Before buying software, preview it. Never purchase a program without personally working with it. Use an evaluation instrument to help you assess the program's content, adaptability, and compatibility with your teaching style. Without an objective tool to guide the evaluation process, you may be captivated by the delightful animation, dramatic images and sounds, and clever interactions, failing to realize that the content is inadequate or inaccurate. In addition, the program may lack good instructional design or have technical difficulties. Philosophically, it may be incompatible with Christian standards and belief.

*Before selecting software, teachers must define their instructional goals and objectives.*

A combination of approaches may be best for teachers who are new to evaluating software. Marshall suggests that teachers should avoid evaluation checklists and just answer these basic questions: "What contribution will this make to my classroom and what can I use this for that I couldn't do before?"[4] Another important question to ask is, "How will I use this to enhance learning?" By thoughtfully answering these questions, teachers will be able to make better software choices. The International Society for Technology in Education (ISTE) is preparing to release a new book, *ISTE Guidelines for Evaluating and Selecting Interactive Technology Resources.* (See the sidebar on page 26 for a summary of those guidelines.)

Finally, have your students test the program, if possible. Are they motivated by it? Is the program easy to use? Do the students get frustrated because of the level of knowledge or expertise required? Do they like it? Encourage critical thinking by asking students to analyze and evaluate the software. This will help them to become better consumers.

**Tips to Remember Before Purchasing Software**

- Define your instructional goals, objectives, and strategies.
- Decide what kinds of software you need.
- Buy tool or application programs first.
- Get recommendations from professional journals and other teachers.
- Match hardware and software specifications.
- Evaluate software personally.
- Test software with students.

Following these tips and evaluation guidelines will ensure that you and your students have software that you and they will enjoy and benefit from for years to come.

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### Resources

Educational Resources, 1550 Executive Drive, P.O. Box 1900, Elgin, IL 60121-1900. Phone: (800) 624-2926; Fax: (708) 888-8499 or (708) 888-8689.

Educational Software Institute, 4213 South 94th Street, Omaha, NE 68127. (800) 955-5570.

International Society of Technology in Education, 480 Charnelton Street, Eugene, OR 97401. Phone: (800) 336-5191; Fax: (503) 302-3778; America OnLine: ISTE; CompuServe: 70014,2117; Gopher: iste-gopher.uoregon.edu; Internet: iste@oregon.uoregon.edu.

Learning Services, P.O. Box 10636, Eugene, OR 97440-2636. Phone: (800) 877-9378 (West); (800) 877-3278 (East); Fax: (541) 744-2056; URL: http://www.learnserv.com.

### Software

*Astound*. Gold Disk, P.O. Box 789, Streetsville, Ontario, Canada L5M 2C2. (800) 982-9888.

*ClarisWorks*. Claris Corporation, 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168. (408) 727-9054.

*Compel*, Asymetrix Corporation, 110 110th Avenue NE, Bellevue, WA 98004. (800) 448-6543.

*Creative Writer*, Microsoft Corporation, One Microsoft Way, Redmond, WA 98052-6399. (206) 454-2030.

*HyperStudio*, Roger Wagner Publishing, 1050 Pioneer Way, Suite P, El Cajon, CA 92020. (619) 442-0522, Ext. 13.

*Kid Works II*, Davidson & Associates, Inc., P.O. Box 2961, Torrance, CA 90509. (800) 545-7677.

*LinkWay Live*, IBM, 2929 North Central Street, Phoenix, AZ 85012. (800) 426-4338.

*Microsoft Works*, Microsoft Corporation, One Microsoft Way, Redmond, WA 98052-6399. (206) 454-2030.

*Persuasion*, Adobe Systems Incorporated, P.O. Box 7900, Mountain View, CA 94039-7900. (800) 628-2320.

*PowerPoint*, Microsoft Corporation, One Microsoft Way, Redmond, WA 98052-6399. (206) 454-2030.

*Student Writing Center*, The Learning Company, 6493 Kaser Drive, Fremont, CA 94555. (800) 852-2255.

REFERENCES


1. M. Valeri-Gold and M. P. Demming, "Computers and Basic Writers: A Research Update," *Journal of Developmental Education* 14:3 (Spring 1991), p. 5. (From Jay Sivin-Kachala and Ellen R. Bialo [1994]. *Report on the Effectiveness of Technology in Schools 1990-94*, Washington, D.C.: Software Publishers Association).

2. Michael R. Simonson and Ann Thompson, "Teaching With Computers: An Overview of Computer-Based Learning," *Educational Computing Foundations* (New York: Macmillan Publishing Company, 1992), pp. 105-135.

3. K. R. Willing and S. Girard, *Learning Together: Computer-Integrated Classrooms* (Markham, Ontario: Pembroke Publishers Limited), pp. 64, 65.

4. G. Marshall, "Say Goodbye to Checklists: A New Approach to Choosing Software," *CUE Newsletter* 18:2 (March/April 1996), pp. 6, 7.

5. Draft of ISTE Guidelines for Evaluating and Selecting Interactive Technology Resources. Judi M. Johnson, "Software Reviews," *Learning and Leading With Technology* 32:1 (September 1995), p. 56. Used by permission.


## Draft of ISTE Guidelines for Evaluation and Selecting Interactive Technology Resources[5]

**Instructional Design**

- The program is pedagogically sound.
- Current educational research is embodied in and effectively used throughout the program.
- The program promotes creativity, problem solving, and the development of higher-order thinking skills in students.
- The program makes effective use of interactive strategies.
- Learners find operation of the program to be intuitive, with simple commands that seem to be transparent.
- The program has a well-designed and appropriate hardware interface.
- The presentation design enhances the learning experience.
- Features in the program support the learning/teaching process.
- The program allows students and teachers to create individualized instruction.
- Use of multimedia enhances the learning experience.
- The interest level is well suited to the learner.
- Instructional tools are designed for ease of use and for meeting a variety of learner needs.

**Content**

- The program content is presented impartially and without bias or distortion.
- The program content is appropriate to student needs, curriculum area, purpose, and grade level.
- The program content and design meet the needs of students at varied levels of English language acquisition.
- The program has current, thorough, and relevant information.
- Reference content on electronic media is fully and accurately indexed.
- Search strategy software for electronic reference tools is designed to stimulate student research and to facilitate student access to information.
- Search results can be displayed and printed appropriately.
- Search strategies are adapted as appropriate for periodical indexes.

**Teacher Support**

- Teacher support materials enhance the value of the program.
- Helpful and complete instructions for using the program are provided.
- Teacher support materials contain essential program information for planning lessons.
- Teacher support materials contain suggestions for curriculum integration and using the program in a variety of instructional settings.
- Packaging is appropriate and provides essential operation information.
- The publisher/producer/distributor provides good support.

**Technical Quality**

- The program and all components are reliable under normal use.
- Program installation requires a minimal level of computer expertise.
- High-quality audio contributes to program effectiveness.
- High-quality visuals contribute to program effectiveness.
- The program operates effectively in a network environment.